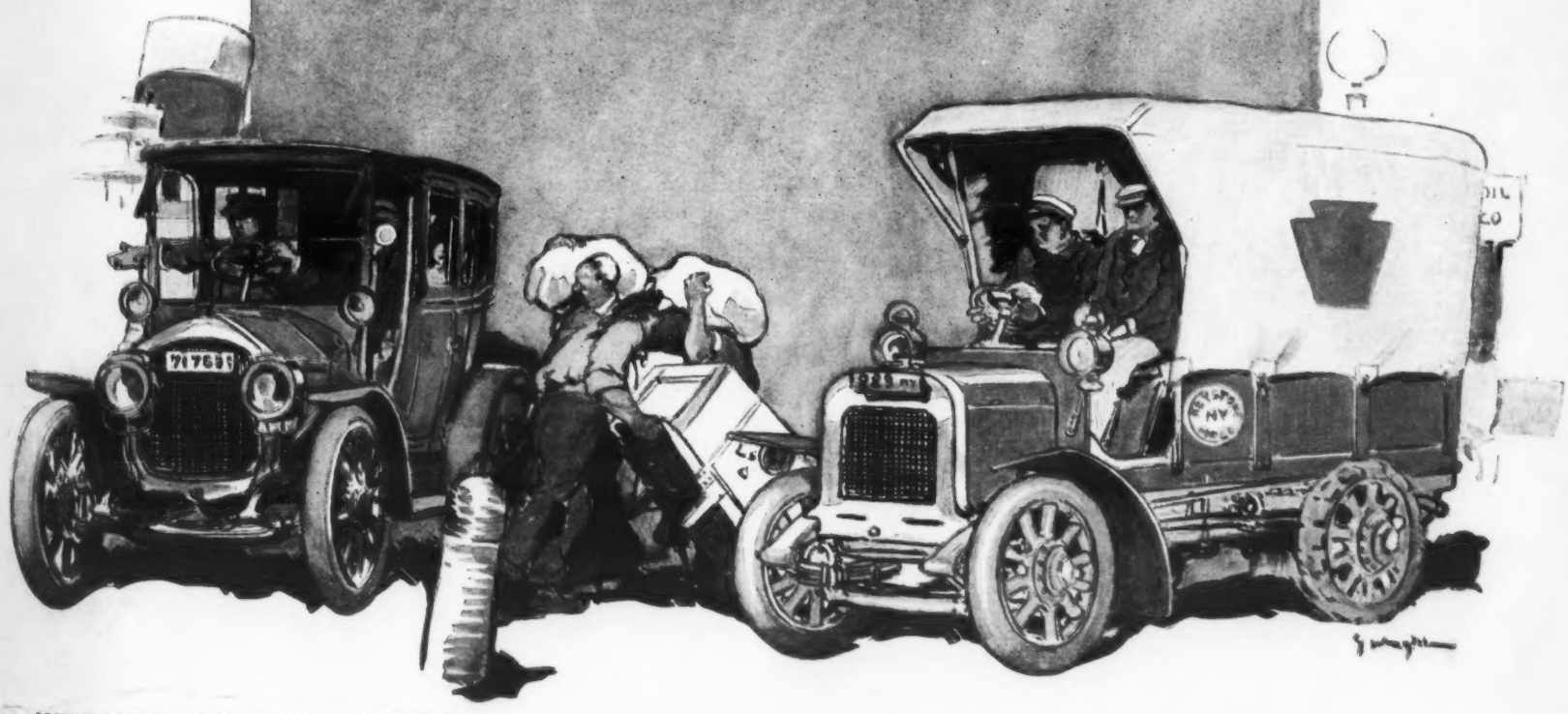
Collier's for January 11, in Two Sections. *Section TWO*

Collier's

THE NATIONAL WEEKLY

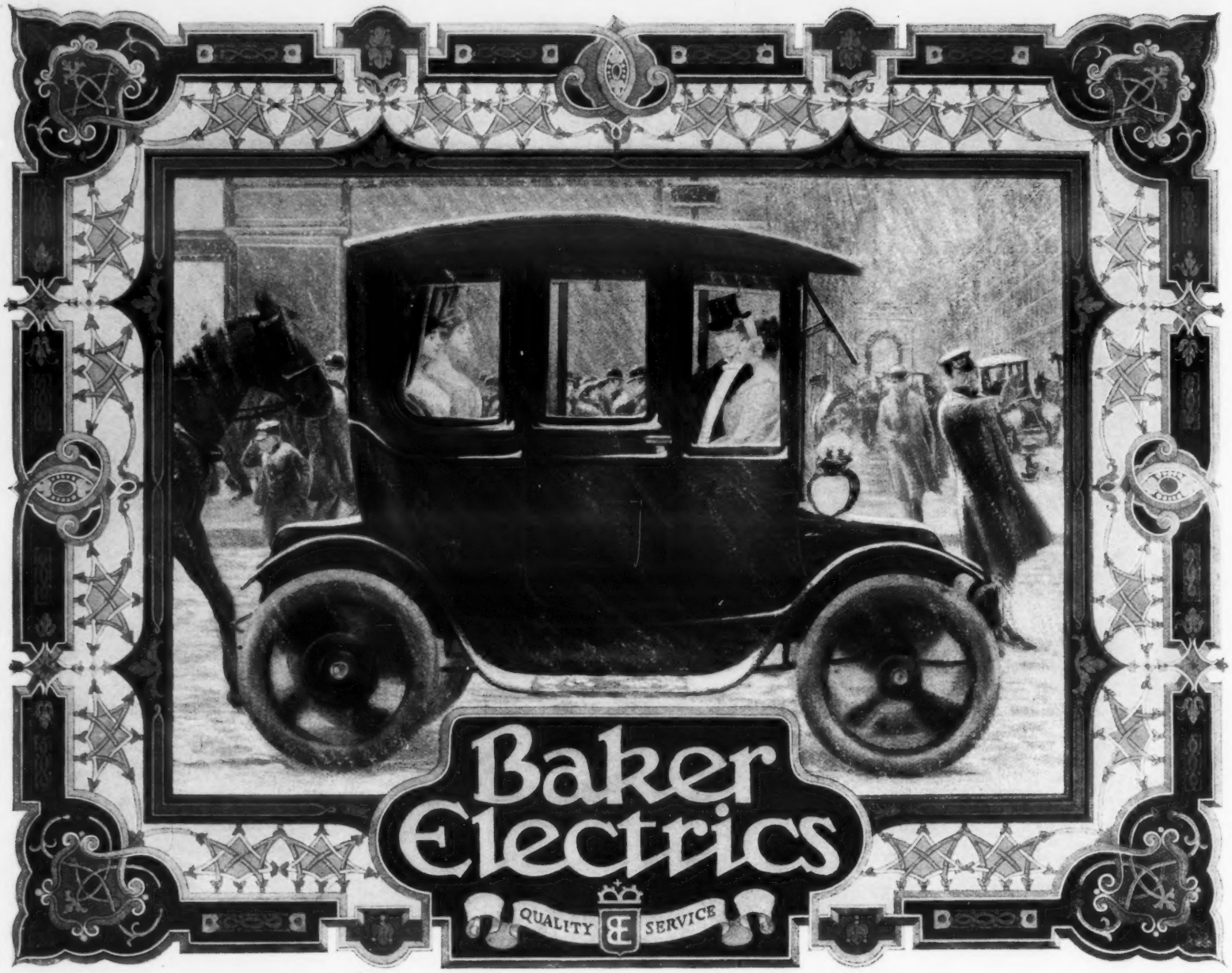
ARTICLES *and* STORIES
by
Gelett Burgess
Edwin Balmer
George Fitch
Walter Hale
Fred J. Wagner
Wilbur D. Nesbit
Lee Shippey



COPYRIGHT 1913 BY P. F. COLLIER & SON, INCORPORATED

Automobile Section

VOL FIFTY NO 17 JANUARY 11 1913



More Luxury—New Conveniences—Greater Comfort in the Magnificent New Baker Coupé

Selling an automobile on paper involves two things: unbounded confidence in the maker and unapproached beauty in the car.

This explains why the mere announcement of the magnificent New Baker Coupe resulted in the sale of hundreds of cars throughout the country, even before the first lot had received the final touches in their careful course through the big Baker plant.

There could be no more emphatic proof that this handsome model—the latest creation by the oldest, foremost and largest electric car builders in the country—fully meets the public demand for a thoroughly stylish, yet conservative, coupe. It is a big, roomy motor car, with full limousine back, longer wheel base, graceful low-hung body lines, and new hoods of French design.

REVOLVING FRONT SEATS are one of the innovations introduced in this Baker Model. These permit the occupants to face forward or turn about, while an easy view of the road is secured from the rear seat because of the exceptionally low front and front quarter windows.

Either Lever or Wheel Steer

The former from rear seat, the latter from left front seat (with controlling lever attached to steering mast). In every detail the New Baker Coupe strikes the last note of supremacy in convenience and luxury.

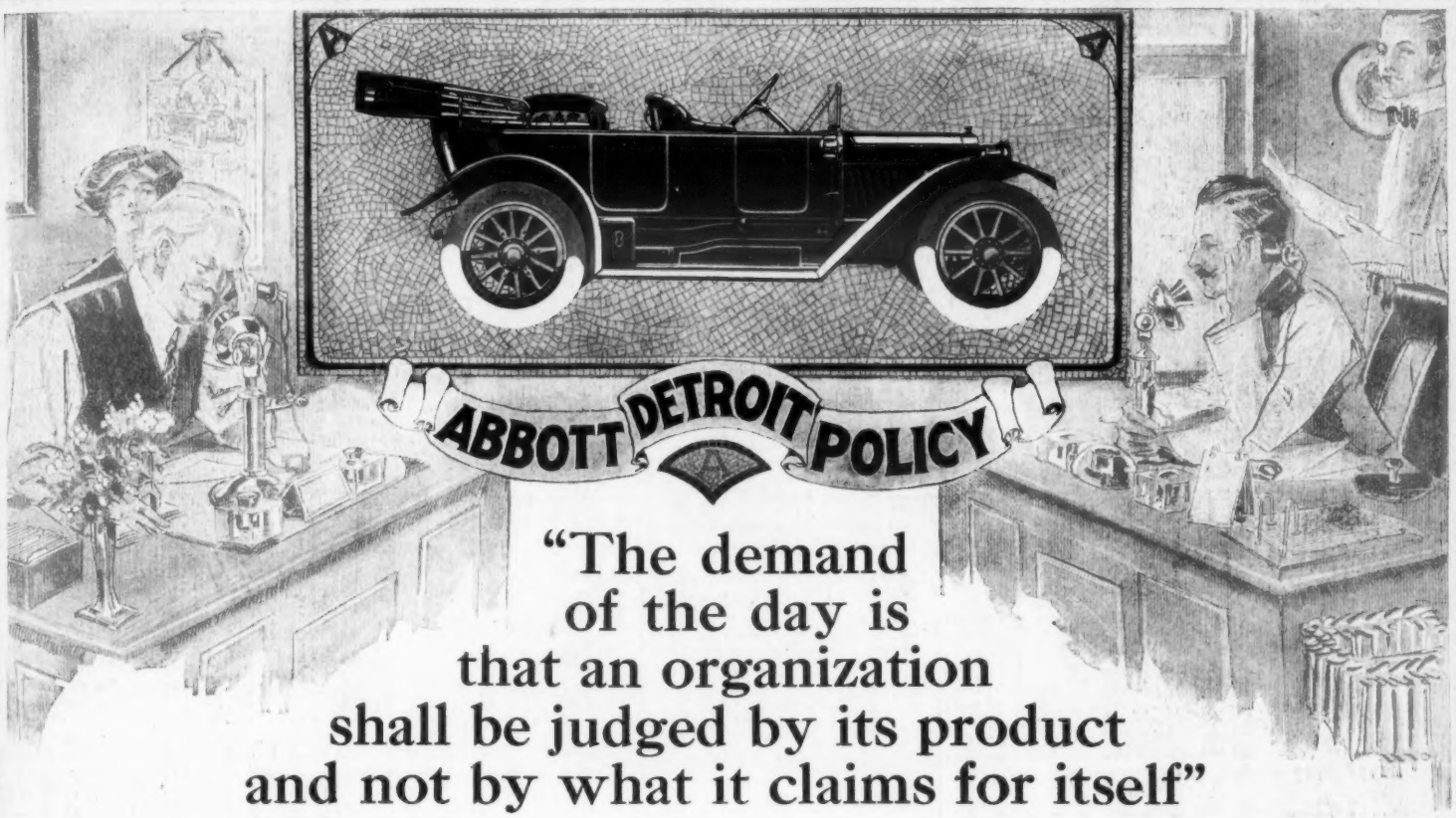
Baker luxury is the enduring kind because the car itself was built *first:* the luxury was added afterward. With Baker beauty is unquestioned mechanical excellence—the kind that gives the car its long life; its ability to climb hills, plough through snow, sand and mud and stand up under the hardest service, always at a *lower cost of upkeep* than any other electric.

THE BAKER MOTOR VEHICLE COMPANY, CLEVELAND, OHIO

Builders also of Baker Electric Trucks

CANADA: The Baker Motor Vehicle Company of Canada, Ltd., Walkerville, Ont.

New York, 1798 Broadway
Chicago, 1221 Michigan Avenue
Philadelphia, 1927-29 Market St
Boston, 801 Boylston Street
St. Louis, 5201 Delmar Avenue
Detroit, 815 Woodward Avenue
Pittsburgh, Center & Morewood
Kansas City, 3105 Gillham Road
Atlanta, 57 S. Forsyth Street
Washington, 1140 Connecticut Av
Los Angeles, 10th & Olive Streets
Sacramento, 1217 Seventh Street
Louisville, Brook & Broadway
Memphis, 185 Memphis Street
San Francisco, Golden Gate & Van Ness Avenues
Rochester, 15 Circle Street
Dallas, Texas, 1517 Elm Street
Dayton, O., 3rd & Bainbridge Sts
Syracuse, 234 James St
Spokane, 818 4th Avenue
Denver, 1542 Broadway
Springfield, Mo., 214 N. Jefferson St
Grand Rapids, 66 Sheldon Avenue
Zanesville, O., 17 Culbertson Av
Terre Haute, Ind., 121 S. 7th St
Savannah, 5 Perry St., E
Seattle, Wash., 1718 Broadway
Davenport, Ia., 124 East 4th St
Des Moines, 1703 Grand Avenue
Cincinnati, 1609 Madison Road
Columbus, O., 165 North Fourth St
Decatur, Ill., 210 Citizen's Bldg
Hartford, 118 Church Street
Springfield, Ill., 917 E. Washington
Wichita, Kan., 231 S. Topeka Av
Omaha, 40th and Farnam Streets
Asheville, N.C., 42 Patten Av
Jacksonville, Fla., O. A. Pickerell
Richmond, Va., 1625 W. Broad St
Galveston, Tex., 714 Tremont St
Quincy, Ill., 12th & Hampshire Sts
Charleston, S.C., 47 Meeting St
Bloomington, Ill., 507 N. East St
Erie, Pa., 1319 Peach Street
Oklahoma City, 1121 N. Robinson
Columbia, S.C., Arcade Bldg
Onumwa, Ia., 111 E. 2d St
Wooster, O., 348 E. Liberty St
Champaign, Ill., B. F. Stoltey
Buffalo, 178 W. Utica Street
Mobile, Ala., 11 N. Water St
Indianapolis, 510 N. Delaware St
Charlotte, N. C., 504 W. 5th St
El Paso, Texas, 311 Texas St
York, Pa., 362 W. Market
Jackson, Mich., 109 W. Pearl
Evansville, Ind., 23 Main Street
Newport, R. I., 19 E. Bowery St
New Orleans, 704 Baronne St
Youngstown, O., Boardman & Wa[illegible] nut Streets
Enid, Okla., 117-123 N. Grand St
Salt Lake City, 27 Richards Street



"The demand of the day is that an organization shall be judged by its product and not by what it claims for itself"

THIS is the age of specialization, in the manufacture of motor cars as in everything else.

Makers formerly thought it was necessary to make all the parts of their car in their own plant. They no longer do so. The**jack-of-all-trades-and-master-of-none period is past.**

While it is true, of course, that some automobile companies still make most of the parts of their cars in their own plants, yet the enormous overhead expense, which very frequently runs into appalling figures makes it difficult for them to keep up their high standard of workmanship in competition with the more modern methods.

The almost overnight changes in methods of manufacture and in materials are causing such enormous depreciations in machinery and tools, that it is extremely difficult for this type of manufacturer to keep up with the times.

Some mechanical operations that required a day to perform one year ago, are now accomplished in 3½ minutes. Machines which two years ago were limited to an output of seven parts a day will now, owing to improved methods, turn out three hundred.

Great Progress

Never in the history of manufacture have there been such rapid strides made in efficiency and production. Therefore, it behooves the purchaser before he buys a car, to consider well the types of manufacturing plants operated by the various makers.

What two years ago might have been considered ideal practice is antiquated today.

Successful firms must be in a position to change quickly, easily—at a moment's notice.

They must be free to adopt new methods and new materials, free to incorporate new ideas and suggestions.

The Abbott Motor Company can do this.

Abbott-Detroit advertising for 1913 is being printed in serial form. This is the seventh of the series. The eighth will appear in Saturday Evening Post February 15, Collier's Weekly February 8, Life February 2. Copies of previous advertisements sent on request.

ABBOTT-DETROIT ELECTRIC SELF-STARTER

All 1913 Abbott-Detroit cars are equipped with our own specially designed, self-contained electric self-starter. Connected to crankshaft with independent train of gears. When gasoline motor starts, over-running clutch releases gears and they remain idle while gasoline motor is running.

Not an experiment—not an attempted combination of ignition, lighting and starting, but a real dependable self-starter, built as a part of the engine, included as regular equipment.

Visit our Sales rooms and have its operation explained.

Continental Motors—Why

We have demonstrated that our policy of buying motors and many of our other important parts from **specialists,** has enabled us to give the public a **better product** for **less money.**

For instance, our motors which are manufactured by the Continental Motor Mfg. Company after our own design and under our personal supervision, are **unquestionably superior** to the ordinary "made in our own factory product." This is due to the fact that the Continental Motor Mfg. Company has made a **specialty** of **manufacturing automobile gasoline motors for many years.**

Their methods and machinery are **particularly adapted** to **motor manufacture.**

Their men have been trained to **do this one thing** and do it **well.**

Abbott-Detroit

Built for Permanence and Guaranteed for Life

We are compelled to take only those motors which are entirely satisfactory.

We are not compelled, as are many manufacturers who use their own motors, to lower the standard of inspection on a power plant during rush periods.

Every motor must be **right** before we accept it, and thus we get the **very cream** of the **product.**

Purchaser Gets Benefit

This same policy of giving the purchaser the best we can for the money has been carried out throughout the entire car.

The quality is there. It only remains for you to satisfy yourself regarding its value.

Therefore, call at our sales rooms and let us show you the cars that have been produced under such a policy: The new 1913 Abbott-Detroits—**the best cars in the world at the price**—"Built for Permanence" and "Guaranteed for Life."

Remember—

Electric Self-Starter
Electric Lighting
Standard Equipment
on all Models

"The demand of the day is that an organization shall be judged by its product and not by what is claimed for itself."

This is our slogan. Apply it when inspecting the 1913 Abbott-Detroit Cars.

Models and Prices

34-40	Fore-Door Roadster, 116-inch wheel base	**$1700**
34-40	5-Passenger, Fore-Door Touring Car, 116-inch wheel base	**$1700**
44-50	5-Passenger, Fore-Door Demi-Tonneau, 121-inch wheel base	**$1975**
44-50	7-Passenger, Fore-Door Touring Car, 121-inch wheel base	**$2000**
44-50	Battleship Roadster, 121-inch wheel base	**$2150**
44-50	7-Passenger, Fore-Door Limousine, 121-inch wheel base	**$3050**

Advance catalog on request.

ABBOTT MOTOR COMPANY

602 Waterloo Street **Detroit, Michigan**

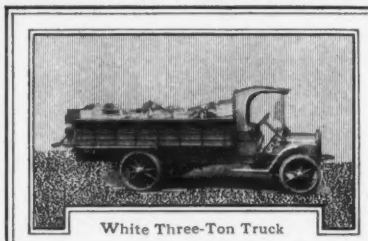
The White Factory at Cleveland, Ohio
Where White Motor Cars and Trucks are Manufactured

White *Self-Starting* Six-Sixty Touring Car

White *Self-Starting* Six Berline Limousine

White Five-Ton Truck

White *Self-Starting* Six-Sixty Roadster



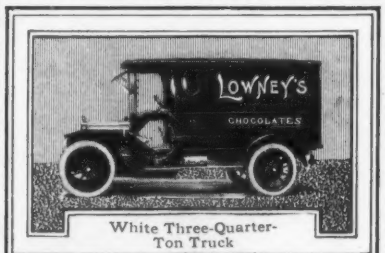
White Three-Ton Truck

The greatest variety of motor vehicles produced by any company in the world is a White achievement, the result of more than fifty years of practical manufacturing experience, and during all these years the name of White has been the guarantee of absolute responsibility and excellence of production.

White *Self-Starting* Forty Coupe

White One-and-One-Half-Ton Truck

White *Self-Starting* Forty Touring Car



White Three-Quarter-Ton Truck

THE WHITE COMPANY
CLEVELAND

White *Self-Starting* Thirty Touring Car

White Five-Ton Power Dumping Truck

White Ambulance

Collier's

THE NATIONAL WEEKLY

ROBERT J. COLLIER, EDITOR

MARK SULLIVAN, ASSOCIATE EDITOR

STUART BENSON, ART EDITOR

Automobile Supplement

The New Sport—"Auto" Polo

Polo ponies have found rivals in motor cars. "Auto" polo can be played upon any flat field the size of a football gridiron. Two machines, stripped to the chassis, with the exception of running boards, are used by the players. Each team consists of two players, one to drive the car and the other the ball

Specify the Tires Which Reduce Car Expense

Service Security Comfort Economy

These are the sure extra values you get when you insist on

Firestone Non-Skid Tires

The service of longer tire wear and less car repair by extra thick, tough, resilient tread.

The security of sharp edges, abrupt angles and deep hollows, which grip the slipperiest pavement, the iciest boulevard, the muddiest road. Skid, slip or mishap cannot occur.

The comfort of car springs *helped* by a built up and unequalled thickness of high percentage rubber tread.

The economy of tire and car bills reduced, of fullest traction assured.

Most Miles per Dollar of Cost

Most Miles per Gallon of Gasoline

Most Miles per Dollar of Car Upkeep

are proved Firestone accomplishments.

THERE are seven hundred and fifty thousand car owners in the United States alone.

Three million tires will be constantly in use this year, and far more than that will be bought.

Yet it is safe to say the vast majority of owners outside of the experienced and knowing driver will give little study to the tire equipment of their new cars. It has become a habit to accept, without question, *any* tires with which the car happens to be equipped.

The car is studied from motor to lamp-bracket. The tires, on which the full efficiency and continued service of the car depend, are taken for granted.

Beginning with January 11, at Madison Square Garden, New York, the car manufacturers will be showing their new models. You will investigate them all before you buy. That's good business.

Continue this investigation and learn every point about your *tires*. Resilient, long service tires such as those of Firestone make, will *add* to the value of your car, will give that car protection and final touch of superiority which you want your automobile to have.

Tires in which quality or workmanship are skimped can *add* nothing but tire expense and car repair bills.

A good car with inferior tires is like a mansion with a leaky roof.

Tires, to give you the service they should, must be built to the absolute standards established by actual road conditions, everyday road emergencies.

It is therefore of vital importance that every car owner or buyer be ***sure*** the tires which he places on his car measure up to this positive basis. It is just as vital that he ***specify*** and ***insist*** on the tires which will meet all essentials in the fullest degree.

If the tires which are on your new car don't measure up to sure values, you don't have to take them. Demand the tires you want—you will get them. Guesswork need not enter into your decision in any way.

Guesswork has no part in the building of Firestone Tires. Nothing but material which will certainly meet every road demand, nothing but design and building which will master every emergency are employed.

Specify the tires which have never had an off season in their twelve years of leading quality. Insist on the tires which are backed by the personal responsibility of the builder, the tires which bear his name.

Get the unbiased guide book to sure tire values and service, "What's What in Tires", by H. S. Firestone.

The Firestone Tire & Rubber Co.
"America's Largest Exclusive Tire and Rim Makers"
Akron, Ohio **All Principal Cities**

Sure Standards of Tire Worth

Fabric—Finest grade combed Sea Island cotton, tested and inspected, filled with pure Up-River Fine Para Rubber, built up wall by wall.

Cushion Layer—Pure Up-River Fine Para, applied layer by layer and cured into one solid piece of fullest resiliency.

Breaker Strip—Combed Sea Island cotton cord filled with pure Up-River Fine Para Rubber.

Tread—Extra thick though light in weight. Scientifically exact proportion of pure Up-River Fine Para. Must be tough yet resilient. Built layer on layer by hand.

Side Walls—Extra high percentage of Up-River Fine Para, built to liberal measure of thickness.

Bead—Combed Sea Island Cotton Cord, filled with Up-River Fine Para, pressed into foundation of extra strength and cured into tire.

These are the Standards to which Every Firestone Tire is Built

Firestone

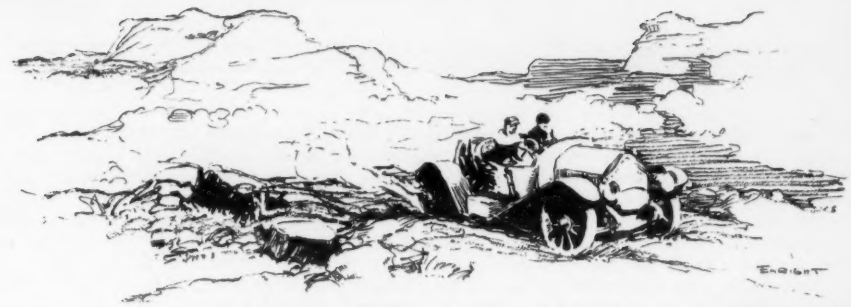
Non-Skid and Smooth Tread Tires

Beating 'Em to It!

The Manufacturers' Race for Supremacy

By GELETT BURGESS

Illustrated by W. J. Enright



A BIG red automobile! There's no use denying it, that's what, in your secret heart, you really wanted. This was only the boy form of your desire, however; you soon outgrew such meager specifications. When Robert Allison of Port Carbon, Pa., bought the first American gasoline stock car ever sold, the only guarantee he demanded of his "horseless carriage" was that it would run. This was on April 1, 1898. Mr. Allison is the father now of some hundreds of thousands of customers; but every one of them is motor-wise. Their cars must not only run but be economical, efficient, beautiful, convenient, simple, swift, and durable. It is this canny public that is responsible for the development of the automobile. From its fiat came the modern car.

The American automobile ten years ago was an awkward beast, short, uncertain, noisy, ugly, slow. Crude? Why, the first few had, actually, whip sockets on their dashboards! There was no such thing as "type." One make was as different from another as a wheelbarrow from a baby carriage. You needed only to hear them to tell them apart, those humble progenitors of the smart, arrogant vehicles of to-day.

How did it come to pass, then, that first one and then another make of cars attained a temporary supremacy? The secrets of the trade were so well kept in early days that you had to have either false whiskers or a search warrant to get into a factory. How did it happen, then, that the different cars came to resemble each other so closely? Opposing ideas struggled for existence. How came the survival of the fittest? The history of the automobile is a romance!

SOME of that glamour of adventure is gone, but still secrets are guarded behind locked doors. I could show you a car to-day whose hood any designer in the trade would give a good deal to lift. There are engineers in Detroit and Cleveland and Indianapolis and Buffalo over whose shoulders a hundred lesser inventors are trying to look. Metallurgical formulas are so closely kept that not even the superintendents in the same shops can discover them. In the experimental rooms are models and machines upon which may depend future valuable patents.

Let us see how an automobile plant is operated. Take the Mayhem Six, the last word in speed, gimp, and endurance. It is the first of January. The 1913 model has been announced and exhibited. Hundreds have already been sold before the Automobile Show "uncovers" it and makes it widely public. The plant is running to its greatest capacity, turning out the new cars. But that is only a part of its work. For almost a year now the engineers have been working on the designs of the 1914 model, perhaps a radical departure from the present car.

Already from three to six experimental models of the new machine have been built by hand. Each one is slightly different. One has a new carburetor, one has a slightly longer chassis, one is trying out a new type of platform springs. These models are chasing all over the country. Expert drivers have been sent out with them. "Break 'em up! Find the weakest point!" are their instructions. One car is straining at the long Pittsburgh hills, another goes plowing through Michigan sand. One is in the Rockies, one on the Arizona desert. Each one is being driven desperately, night and day. But, even if you own a Mayhem car, you wouldn't know these machines. They are disguised under old bodies; their wheels, perhaps, have plain hub caps. If they stop at public garages, they are guarded like thoroughbreds. Every day, to the chief engineer, come telegrams, reporting their mileage, the fuel and oil consumption, the necessary repairs. This testing lasts as long possible. Meanwhile, for the making of all the parts which are decided upon beyond doubt, tools and jigs and dies are being forged, so that, as soon as the final designs are approved, the rush of manufacture may begin immediately.

THE engineers, however, are loath to "release" the drawings and let the manufacturing department begin to build. They want more time to perfect, to simplify, to experiment. But the manufacturing department clamors: we *must* begin! June comes; the engineers are not on speaking terms with each other. The pet improvement of one is rejected; another's hobby is put over to next year for further trial. The car is a compromise, too, between the ideas of the engineers, who want everything sacrificed to efficiency, and the body designers, who insist on comfort and elegance. The levers have simply *got* to come up through the body right here! The frame *must* be an inch longer.

Well, at last it's up to the "old man"; and when *he* decides — presto! — the shops get busy. First the drawings and blue prints, next the making of jigs and tools; then, suddenly, the pay roll jumps by thousands of dollars—the manufacture of the cars is started and the factory burbles at high pressure.

NOW the dealers call, write, telegraph, insisting on news. Not a word! For, once they know the details of the 1914 car, the information spreads like wildfire. No, *sir*, the stock of old cars must be protected or they will not sell. For dealers are casual cattle, this year handling one car and next year another. They may "switch" at any moment and carry your pet secrets to another camp. On July 1 a few favorite trusted agents are cautiously told. In August the car is formally "announced." The first few are gobbled up, hustled off to New York, New Orleans, Chicago, and San Francisco. There they are exhibited, ransacked, damned, and praised. The million-dollar advertising department heralds it in newspapers and catalogues.

But don't think this is all! Plenty more worries. The 1915 car is being planned as well. So far the plans are tentative, but "forework" is being done behind the locked doors of the drawing-rooms and experimental shops. New ideas, gleaned from inventors, engineering papers, foreign makers, everywhere, are being tested with pressure gauge, micrometer, and horsepower brakes. The metallurgists are analyzing new alloys; new processes of heat treatment are being perfected. New upholsteries, fittings, conveniences, bodies, windows, nonrattling wind shields are being discussed. More trades contribute to the making of an automobile than to any other popular article in the world; and every new kink in every line must be examined, tested, decided upon.

Do you see now how many secrets the manufacturers have to guard? Think of the competition—a hundred makers are entered in the race for supremacy. Upon small points luck may turn. We must strive to the utmost if we are to capture the prize. The five-hundred-mile race! Pshaw! It's a simple affair compared with *this* contest! Not to know what every other maker is doing, not to know what the public will demand, threatens ruin!

FOR the great buying public is the judge of the race. Mr. Public—and his wife! And, on the caprice of that pair, manufacturers have broken their hearts. Look for a moment at the list of defeats. See how one feature after another has been discarded in the evolution of the motor car, and how manufacturers who have not been able to see which way the cat would jump have been eliminated from the contest.

Hark back to 1900. An article in the "Horseless Age" is predicting that acetylene is to be the coming motive power; but steam is the real favorite. Where is the steam car now? A single company of any prominence represents the industry. Over the doors of garages one may now read: "Steamers not Admitted." Little cars, white clouded, still scamper over the Massachusetts hills, but the West has declared the method is too complicated. Can't spare that fifteen minutes in the morning to get up steam.

Accessibility goes now without saying—the days of having to crawl on one's back under the engine are forever in the past

Who killed the "two-cycle" engine? "I," said the six cylinder; "with my continuous power impulse; I killed the 'two-cycle' engine!"

Where is the chain drive? Only on the race track now! Remember your old bicycle? How hard it was to clean the chain—how the links stretched, how the chain jumped the sprocket! But it pulled! It pulls a car, now, harder than the shaft drive; it might be said that, in a way, it is more efficient. But Mr. and Mrs. Public turned down their thumbs. Chain-driven cars, on American roads, are seen no more.

So every improvement is at the mercy of the public's verdict. Competition drives one company after another to produce modifications, simplifications, constructive ideas. Each competitor's rivals fight the innovation tooth and nail. But Mr. Public nods his head, Mrs. Public smiles. Right or wrong, the thing has come to stay. Everyone must fall into line, make expensive changes in plant and laboratory and tools, so as to match up with the improved car next year. If you don't, you'll get caught with an unsalable, obsolete car.

SO ALMOST every change from the accepted type has been a "talking point" one year, viciously attacked by the laggards in the race, and adopted without argument the next season. What a babble of objections assailed the first two-cylinder car! "Why, if you have so much trouble with *one* cylinder, you'll have twice as much with *two!*" The battle was fought over again when the four-cylinder car came in—and the "six" had fairly to claw its way into favor. It was complicated, it was expensive. Gee, only eight miles to a gallon? But now almost every maker of prominence has fallen into line. The "six" has come to stay.

Look over the list of improvements once so fiercely fought. To-day, on your car, you take it for granted that it has three-point suspension, offset crank shaft, foredoors, direct drive, selective type of transmission, carburetor adjustment on the dash, three-quarter elliptic springs, gas tank on the rear, and demountable rims. But every one of these things has come only through competition and a public demand. All of them have been derided by other makers, but have conquered. You have won, too, the long, long fight for accessories. The makers have surrendered. They began, you remember, by grudgingly granting you three measly little oil lamps —they have ended by presenting you everything! One of this year's cars includes even an electric cigar lighter.

Truly, in this business, Invention is the Mother of Necessity. Until they were told, Mr. and Mrs. Public knew nothing at all about the difference between angle-iron and pressed-steel frames; but, once learning the secret, they demanded the improved construction. No sooner were Turkish cushions announced than they were welcomed with a joyous shout: "We must have 'em!"

But, though the public may be educated, it will not be coerced. Pig-headed manufacturers once used to try to force their own ideas on the market. One went so far as to produce a wonderful "sea-shell" body with three cylinders and three wheels; he positively insisted that it be bought. The public laughed at it, and moved on.

A witty advertiser once said of the old rear-entrance tonneaus: "There are only two things you have to enter by the rear: an automobile and a hearse!" And after that the public demanded side doors; no amount of silly baskets over the wheels could defeat the new fashion.

CURIOUS, though, this difference between the purchaser and his wife! Most of the low-priced cars are bought by men. Men demand efficiency. They go carefully over the selling arguments, and consult and debate upon questions of strength, speed, and endurance. Not so, Mrs. Purchaser. She it is who buys the high-priced cars. She jumps on the cushions, she squints at the "lines," she sees that no flower holder or cardcase or speaking tube is missing. But she insists on results all the same! When his car breaks down, a man apologizes for it; a woman damns it outright.

The driver of a car nowadays takes it for granted that it will "stand up." Isn't its designer a member of the Society of Automobile Engineers? He has been to conventions, he has read all the trade journals. The general manager belongs to the Association of Manu-

facturers; the president is on the Automobile Board of Trade. They have investigated every invention as soon as it appeared; examined, experimented, discussed. So the engineering problems have been practically solved. Almost every well-known make of car now is an efficient machine.

But, once this question was settled, the purchaser demanded accessibility. He wanted not only *not* to have to crawl on his back under the engine, not only to be able to see and to reach the parts needing repair or adjustment, but he insisted upon being able to take them out without tearing down the whole engine. Thus accessibility became the next "talking point." But it goes now without saying.

Other sorts of improvements came. Simplicity was the slogan now. Cylinders, previously cast separately, were made *en bloc*. Lubrication was standardized. Selective transmission came in—and dealers talked of "convenience" and "ease of control." The side valve replaced the overhead poppet, and what one maker introduced, talked, and defended, had, if successful, to be adopted next year by all his competitors.

Do you recall the furore for foredoors in 1910? Now foredoors had been known for several years on certain high-priced cars; but, in full mid-season, when factories were working to their utmost capacity, *bang!* out of a blue sky came the popular demand. The craze wrought havoc with the plans of many a plant. Orders for bodies were countermanded, bodies under way were chopped and trimmed, cut open and glued together; any makeshift, even to floppy patent-leather doors, was adopted to supply the new-felt want. "What are you going to do?" asked one manufacturer, and "What are *you* going to do?" demanded another. Nail 'em on, screw 'em on, any old way; never mind how they look. But will they work? No matter, we *must* have foredoors!

So it was only last year with the sudden popularity of the "self-starter." Every maker knew or feared it was coming, but he didn't know just when. There was no good reliable one yet on the market. Every engineer was tinkering and planning and experimenting; a few big, reputable cars had adopted devices of their own, but no one was really ready for the yell.

There was a similar panic when demountable rims were sprung at the Automobile Show in mid-season. Tons of old wheels had to go to the junk pile. The "torpedo" body created another hullabaloo.

The "left-hand drive" will come next. The battle of pros and cons is already raging. Volumes have been written on the subject, illustrated with diagrams of little cars passing and turning and meeting, with dotted lines showing the range of vision. The left-hand drive is the specter that haunts half the factories. Not that they wonder which is best, left or right; no, they are sure that nobody wants to go out into the street to get into his coupé or runabout. The question is: What will the public say? Will it decide permanently for a steering wheel on the right or left side of the car?

But these are great and visible changes that any child would notice. Smaller changes are going on continually—improvements, for instance, in the matter of elegance. In the old days the engineer designed his own body. His main idea was to have the dash covered with all sorts of little levers and oil sights and pressure gauges and fussy adjustments, so that he could spur and coax and tickle his engine as he rode. What cared he for smooth-flowing curves, rectangular panels, "stream lines" or fancy trimmings? Nothing! *He* was interested only in the engine. But the body designer has changed all that.

For a man's car nowadays is as much a part of his personality as his clothes. Style counts. And this not only on Fifth Avenue, in front of a millionaire's residence, but back at the country store.

THAT'S why the buggy car failed. Remember it?—that high-wheel concern, with a chain, or even a rope drive? Wouldn't you say it would be just the thing for farmers—cheap, practical, efficient? But, alas, the farmer—and especially the farmer's daughter—would have none of it. "I don't want that high-wheeled, old, back-number buggy, pa; we want a car that looks like an automobile!" And so the buggy-wheeled autos are found now only in cities, delivering meat and vegetables. The same fate befell those ingenious "convertibles" that were designed to take the farmer's crops to market on week days and the farmer's wife to church on Sundays. So, too, with the little "road louse" (pardon, but that's the technical slang for the smallest car afloat)—the car that was hung from a spiral spring on each corner. A good car, a cheap car, and it would work. But—no bed springs, thank you! It looked cheap. Every automobile owner is an amateur millionaire.

Next came refinements made with the object of reducing noise. In the automobile "silence is golden"; for who doesn't envy a quiet car? It is nothing for a manufacturer to expend thousands of dollars every year merely to keep down noise. Has *your* car cloth gears? Yes, actual cogwheels, I mean, made of linen or fiber! Some have. Has it "silent chains" on cam shaft or transmission? Were your gears ground after being case-hardened? Are your poppet valves inclosed? These are only a few of the maker's methods. A car makes a dozen different noises commingled in its general stir. As fast as one is silenced, you hear sounds never noticed before. So, little by little, the motor is made dumb.

WHEN it comes to style, however, that's where the maker gets insomnia and a few gray hairs. Anyone with capital to back him could, to-morrow, find plenty of engineers to design a car with an efficient, fast, and durable engine. He could be sure of economy and roadability. He could even achieve elegance. But

Hawk-eyed motor maniacs are at large in Detroit—let a new car drive up at a hotel and it is immediately surrounded by a crowd of sharps, picked to pieces and its bones laid bare

style—that's another question; you can't buy style everywhere. Secrets of body design, upholstery, fittings, are the hints that, in the general unpreventable leakage of information, are most eagerly sought. Will the Red car use nickel or brass or silver fittings? Oughtn't we adopt those new French fenders? What about those curved-top limousines? Will the Blue car make those foreign "convertible" bodies standard equipment? Automobile fashions are as whimsical as millinery.

YOU may have noticed that last year many cheap cars came out without door handles. D'you know why? Well, there had been a Yellow car prowling about Detroit that spring with plain doors. See and copy! But, alas, the handleless door was but an experiment—one of a thousand, a detail being tested, awaiting final decision. The "old man" up at the Yellow plant, talking it over with his wife (just back from Paris), came to the conclusion that the door panel, after all, needed a little spot of high light. So, just before the car was finally photographed for the Yellow catalogue, the door handles were added. The little fellows didn't find out in time.

In the old days of the "Mechanics' Branch" of the Licensed Association, the technical discussions were as lockjawed as Quaker meetings. Everyone was afraid of giving away his secrets. Now the engineers will discuss the thermodynamics of the two-cycle engine and the efficiency of the revolving valve glibly enough. Mr. Red will confess to Mr. Blue that, in his experimental department, he is trying out the chain transmission. "I consider it a good thing. It's got to come!" But will he tell whether or not the Reds have adopted it, actually and finally, on their new model? I guess not! The door of *that* room is bolted. On points of theory engineers are brothers; but when it comes to practice, still deadly foes.

The Red men must find out some other way whether the Blues are going to put on 36 x 4-inch tires or not; they daren't order their own wheels till they know, for they must do the same or go them one better. And if they *can* circulate any fake report that will force up the cost of the Blue car—fine!

If that blessed time ever comes, for which all manufacturers hope and pray—the time when the even approximately "final" car is perfected—then competition will be on a different basis. When the plants can settle down to an even keel and sail ahead for five years or so, without having continually to experiment, test, plan, alter machinery and tools, make new jigs every season, hundreds of items of expense due to competition will be eliminated. But as yet there is no "final" car in sight. Still, one maker must watch the other, protect his own secrets, and gamble on the caprice of a fastidious public, eager for a new thing.

Many are the perils of this trade! It must attempt to predict the demand, tie up all its capital in material, wages, and tools; only, perhaps, to have an inclement spring delaying orders, bring ruin. Not only is it disaster to be too far behind the march of improvement, but it is dangerous to be too far ahead. You know what they do to missionaries? They kill 'em and eat 'em! At least two well-known companies manufactured the six-cylinder car years ago, before the public was convinced of its merits. With considerable loss, the makers had to return to "fours." For every change adopted, a hundred have been tried on experimental models and abandoned.

Most makers agree now that any change that is a logical advance in convenience or efficiency is not a fad. But how far shall they go? The new centralized control shown this year, for instance, with a box on the steering wheel standard covered with buttons so that the driver need not move for a single light or adjustment—will it come? Yes, if the public says so. And then it will be a question of "button, button, who's got the button?" and those who have not will suffer and sew them on the day after the fair.

Who can predict what will sell? Not the scientific engineer, not the esthetic designer! The sales force, then? No; the dealer himself is not always to be trusted. He is too apt to welcome any novelty. He is tired of the old "talking points" of the current model. Something new to say—anything new—awakens his enthusiasm, and he is for it strong.

Will it beat the Rough Rider car this year or not? Nobody knows. Once the output is ready, the trial is in the hands of the advertising agent, as prosecuting attorney for the car. Upon him is the burden of proof. The gentleman with the advertising appropriation of a leading automobile concern is no piker. He handles big money. Columns by the thousand he has to buy, and catalogues by the million to pay for. In no other trade can success or failure be attributed so definitely to advertising "copy." In no other business is it made so readable.

The practical psychologist wins—and sells his car. One of the shrewdest schemes ever worked was the invention of the pseudo "semifloating" axle. Now, there are really only two types of rear axles. Here's the idea: A "live" axle, like that of a freight car, bears the weight of the vehicle. One that bears no weight is called "floating." It may be pulled entirely out of the tube which supports the springs, for it is used only to drive the wheels. There is, consequently, no such thing as a "semifloating" type. The term was royally coined by an advertising genius, who couldn't claim the more efficient construction, and it stuck. What happened? He actually established something which didn't exist. Not only that, but so plausible, so suggestive of merit was his phrase that the better cars were even forced in self-defense to dub their own superior axles "*full* floating!"

A clever advertising expert does not depend upon the engineers alone for his copy. He must manufacture news of his car. He must organize sensational endurance runs, he must devise novel stunts for showing off its prowess, put his car into fiction as well as fact, link its names to actresses and judges of the Supreme Court. One advertising man will hear nothing about a new model until it is ready to be advertised. Then the sales force tackles him; they have to answer his objections, convince him, virtually sell him a car. In that way he goes to writing his copy with a hurrah. He is not only enthusiastic, but he knows how a probable purchaser would feel.

SEE how another make of car jumped ahead in the race for supremacy. The originality of its exhibit at the automobile show did the trick several years ago. A handsome limousine was specially gotten up—all in violet, velvet upholstery, and silver trimming—raised upon a platform. About it was a railing with violet silk cords keeping the spectators away. No one was allowed to touch, taste, or handle. How rivals laughed. What! Deny access to an exhibit? Absurd! But it was good advertising psychology. That splendid car

was looked upon as something holy—the last word in elegance and luxury. Surely it *must* be the supreme car—the ultimate of style. And the violet car sets the mode to this very day. You never would believe that its aristocratic radiator front was slyly traced, not so many years ago, with pencil on brown paper, from an imported Mors car!

Never mind! We were watching European styles then. Now that our exports of motor cars exceed our imports, Europe is watching us. We have comparatively little use for foreign cars, except in the larger cities. Under cross-country conditions their great weight breaks them up. They are built for smooth roads, where a three-inch clearance is plenty. Our cars must be lighter, higher, more elastic.

But let's get a little nearer, where we can listen.

DETROIT is the Mecca of the automobile trade. Detroit is motor mad. Hawk-eyed motor maniacs are at large. Let a car drive up and stop at a hotel, and if it has a new radiator cap or a new form of rear spring suspension, one might almost say a new smell, it is immediately surrounded by a crowd of motor sharps; it is picked to pieces, its bones laid bare. In the sociable barroom you had better not ask a man "what make of wheel base are you using this year?"—better not open your mouth at all unless you know a Diesel engine from a clevis pin. They will form an automobile company while you wait—and they have!

"Want a good thing? Come on over, I'll show you!" Get your hat and off you go to a 2 by 4 office with a roll-top desk, a drawing board, and a radiator. "What's your machine like? Well, we'll show you!" And there, before your very eyes, they sketch out the four-cylinder Bluff. "Engineers? We can get *them* any time. All *we* need is capital!"

But now Detroit isn't quite so much like a mining camp as it was in 1905. But listen—if you knew just how many companies have been promoted before their cars were even imagined—well, never mind. Too bad we can't mention names!

Companies are formed in a hurry—and prosper. Companies start slowly, methodically—and die fast. Three months is a long time in Detroit! Thingumbob Motors has absorbed the G. D. F., the Pasteboardine Company, and the Electrocar. "Believe me, bo, that Thingumbob car will be quite some boat next year!" "Have a drink! Did you know the Homicide Six was experimenting with square wheels?" "Martini for mine, thanks!" "Say, that Quick 30 has widened its mud guards two inches so it can be used as an aeroplane, d'you know it? She's a classy gig, all right. Saw the new model yesterday, climbing up the back wall of the shops."

YOU hear how the P. D. Q. kept its name going for a year after it was eaten up by the Wigwagon Motor Company. We all wondered what they were driving at. It's simple enough now. P. D. Q. has frozen out the Wigwagon, and got its name back with two years' hot-work advertising free. The Dallyback is building a mysterious "six" in a factory in Wisconsin, but everybody knows all about it—everybody except their own dealers! How about that secret drafting room three miles away from the Lizzygo plant? Sure! He told me so himself. Why, Lizzygo claims there are four Pickerel men in his factory now, and he's trying to spot 'em. Oh, say! Heard about the Tin Car? Seems they're going to use those curly, "invisible" hairpins on the chassis after this, instead of the straight ones. Fact! Let's order supper.

The drinks smell strong of gasoline at the bar. Men you used to know by their nicknames don't come in now in leather coats and goggles, with oil on their hands, but in furs and silk shirts and socks—they jingle millions. Stop, look and listen, and you will learn more there than in any automobile school or textbook. Let's see.

What's coming next? What is probable, what possible? What is gone and done for? Gone, in all probability, is the crank's delight, the airless tire, the ever-hopeful "spring wheel." The modern engineer will have none of it. It is his bugbear, a sort of perpetual-motion bore that he must evade continually. Hundreds of patents have been taken out for different forms of the spring wheel, but it seems wrong in principle. It was tried and failed on bicycles. In automobile plants it has been tested and tested. Now they will test it no more.

Well, after all this gossip with the engineers, we ought to be able to dope out a 1915 car for ourselves. Suppose we try it.

FIRST, it will have wire wheels. That's a safe bet—there's not half enough second-growth hickory left for wooden spokes. Wire wheels have more "give," sidewise; they are resilient. But they are no new idea. Back in 1904 they were used on most automobiles—in fact, that year many concerns were caught napping by the sudden demand for "artillery" wheels (magic wrought in that name!), and they had to scrap hundreds of wire wheels. Wood superseded them because steel then hadn't been perfected as it is now. It crystallized under the alternate strains. Now we have new alloys—better heat treatments. Wire wheels, though, are hard to wash. Will the public wash them? Everybody is guessing "yes."

Second, our 1915 car will have to burn kerosene. There are no two ways about *that*. The shortage of high-test gasoline is by far the most serious problem in the automobile business. And it is getting worse every year. Think of getting gasoline at two cents a gallon! Yet that was no farther back than 1902. Touring motorists even used to dip it out, free, from the big tanks in Pennsylvania.

So anxious was the Standard Oil Company to get rid of this unsalable by-product of its refineries that it organized gas-engine manufactories in order to create a demand for gasoline.

Then one got "76" gas, and plenty of it. Now we're using 64 to 66 in our cars, and paying exorbitant prices at that. The immense growth of the automobile industry has created an enormous demand. The once discarded by-product is tremendously valuable. Consequently, more and more of the less volatile hydrocarbons are being squeezed out of the crude oil. That is, heavier products are distilled off.

Now, the ordinary motor cannot easily carburet cold gasoline heavier than about 58 test. On account of the shortage in even that quality, we shall soon have to come down to kerosene—the distilled product ranging from 48 to 53. Kerosene doesn't give much flexibility, but it works pretty well when the engine is hot. How, then, shall we start our engine? You know how much harder it is now to crank your engine on a cool morning than it was a few years ago when we had lighter gasoline. Shall we warm the feed pipes electrically? Shall we prime with ether or acetylene? Or shall we have a bifuel carburetor? We may mix gasoline and kerosene, or we may start on one, and then, when the engine is warmed, switch to the other.

ALL over the world engineers are working in different ways at the problem. Much was hoped from denatured alcohol, but the experiments proved disappointing. Must we go back to steam after all? Probably not. The electric motor, gaining steadily in efficiency, may answer the question.

Third improvement—the worm drive. This will replace the bevel gears on our rear axle. Already you hear much talk of worms from the early birds of the experimental rooms. They're coming—as fast as engineers can learn how best to make them. It's not easy to grind a worm. Some say they can't lubricate it properly, and there are problems of clearance, with that lump projecting from your rear axle. But it must come, because it is silent. It is already "conceded" by engineers. The worm will turn!

But when we pass from the probabilities to the possibilities, it's harder to predict.

Let's pray that, at least, the present uncouth gear shift, with its long lever and clashing cogs, will go. It's a woman's terror. Why not just set a small handle on the wheel, and then, after throwing out the clutch pedal, let it gently slip back into the desired gear? How absurd to use gross muscular energy nowadays! Why shouldn't all motive power be electric, hydraulic, or pneumatic?

It may be that we'll have no gears at all, only silent chains. We may have air brakes on our cars. And, perhaps, when our ocean-to-ocean highway is finished, we shall have to cool our brakes as well, to coast down the ten-mile-long grades of the Great Divide.

All of these things are being tried out on experimental cars. Many have already proved successful, some have actually been adopted. But the list is too long. The car of the future, it would seem, will go practically by moral suasion.

BUT, alas! we're not there yet. Back to the present! Back to the oil and dirt and dollars and sense and statistics. Isn't there another part of the automobile plant that we have not yet investigated? What about the place where the spare "parts" are made and stored and sold? You don't hear much about it; but you bet it's no neglected corner!

While the metallurgists are analyzing, the engineers calculating, the designers drafting, and the advertising men planning, the little old "parts" department, without any noise or boasting, is walking right along, making money night and day.

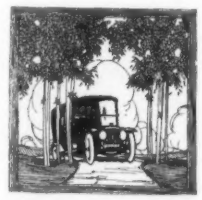
"What becomes of all the old automobiles?" That's a pet bromide in Detroit. Go to Georgia, go to Vermont, go into the back country anywhere and find them. You'll see them in New York and Detroit, a-plenty, for that matter. North, South, East, West, antique passenger cars, made over into commercial wagons, are still doing business at the rate of several hundred fierce little explosions per minute. Disguised as taxicabs, they plug along till their tops drop off. Conscientious engines, rescued from their worn-out bodies, are driving farmers' pumps and separators. They're good enough still for silo machines and churns. And, mind you, every mother's son of them sends, once or twice a year, to the original home factory for a new part to replace wear or breakage.

Why, there's one company in Detroit that could stop manufacturing automobiles to-day, and still earn a small fortune a day for five or six years, simply by selling parts.

Think of the army of automobile owners in the United States—one for every 110 inhabitants! And all of 'em buying parts as hard as they can.

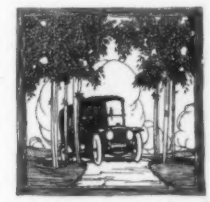
Yes, it must be a solid comfort for those big concerns to know that, with all their risks, there are fortunes salted down in the stock rooms that can be turned into cash if the company fails. You can depend upon them to see to it that the "maximum" and "minimum" supply is maintained in the partitioned shelves full of "carburetor-priming-pump-pet-cock-connecting-rod handles."

AND as for our old friend Robert Allison of Port Carbon, Pa.—God bless him—if he still owns his '98 car, and runs it, Winton only knows how many times he's wired up to Cleveland for a new "lower-left-exter nal-hub-brake-band-adjusting-stop-bracket!"



Roadways of the World's Capitals

The Automobile Entrances and Exits of American Cities Compared with Those of London, Paris, Rome, and Berlin



By WALTER HALE

THE American automobilist who has toured extensively in foreign countries cannot fail on his return to draw comparisons between the handling of traffic, the attitude of the police officials, and the difficulties confronting the driver in the big cities of Europe on one hand and those in the United States on the other. He may also be interested to find that in the past few years the exits from New York have been so improved that now it is easier to drive an automobile out of the metropolis, despite its enormous population and congested streets, than it is to reach the suburbs of any of the capitals on the Continent. Much of this is due to the splendid pavements recently laid down and to the improvement each year in our method of handling the traffic—the ways in and out of the city have always been comparatively simple.

Following the lead of the greater city, Chicago, Philadelphia, and Boston have met the increasing motor-driven traffic by better pavements and well-equipped traffic squads. The exits into the country from the first two are easily found, but the center of Boston, with its sudden hills and twisting streets, will always be a puzzle to the stranger.

In Paris, though there is universal fear of the law in every other direction—automobiles, taxicabs, and auto busses tear through the streets with small regard for the rights of pedestrians, and the only traffic rule that seems to be enforced is the one forbidding smoke from the exhaust. The number of accidents has increased at an alarming rate recently, and during the past summer the newspapers were agitating a movement to control the reckless driving in the Paris streets. The French authorities are slow to act, and it will probably be another year before their system of fines and punishments makes much impression on the chauffeurs who have run riot in Paris for so long.

WHEN the automobile was in its early stages of development and the traffic in the streets of New York was considerably less than it is now, a brother motorist said to the writer: "When you have driven your automobile up Fifth Avenue from the Arch to the Plaza on a busy afternoon, you've graduated!" While this is still an excellent test of the beginner's judgment of pace and control of his engine, there are many more driving experiences to live through before the student has really earned his diploma. There is, for instance, the congestion in the streets walled in by Chicago's skyscrapers, the rush and whirl of the traffic in the Champs Elysée and the Avenue de l'Opéra in Paris, and of the City, the Strand, Pall Mall, and the Kensington Road to Hammersmith in London. Unter den Linden in Berlin, the Corso in Rome, the narrow streets of Milan and Genoa, and the busy Puerta del Sol in Madrid are also to be reckoned with among the thoroughfares of the world's capitals where the automobile driver has to keep his wits about him. Although New York is a comparatively flat city, there are hills in the

GRAY & DAVIS

Quality Equipment ON AMERICA'S LEADING CARS

Here are the names of the automobiles that carry Gray & Davis Electric Lamps, Starter, Dynamo —or all *three* in combination.

ALCO
Dynamo, Lamps

AMERICAN
Lamps

APPERSON
Starter, Dynamo

CADILLAC
Lamps

CHALMERS
Dynamo

CHEVROLET
Dynamo

COLUMBIA
Dynamo, Lamps

CRAWFORD
Starter, Dynamo, Lamps

DAVIS
Starter, Dynamo, Lamps

DORRIS
Lamps

FIAT
Dynamo, Lamps

FLANDERS
Starter, Dynamo

GRAMM TRUCK
Starter, Dynamo, Lamps

GRAMM TRUCK (Canada)
Starter, Dynamo, Lamps

HAVERS
Lamps

LENOX
Starter, Dynamo, Lamps

LOZIER
Starter, Dynamo

MARITIME
Starter, Dynamo, Lamps

MIDLAND
Starter, Dynamo

NATIONAL
Starter, Dynamo Lamps

PAIGE-DETROIT
Starter, Dynamo

PATHFINDER
Starter, Dynamo

PEERLESS
Starter, Dynamo, Lamps

PILOT
Starter, Dynamo

POPE-HARTFORD
Starter, Dynamo, Lamps

PRATT- FORTY
Starter, Dynamo, Lamps

REO
Starter, Dynamo, Lamps

SELDEN
Dynamo

SPAULDING
Starter, Dynamo

STEARNS
Starter, Dynamo

STODDARD-DAYTON
Dynamo, Lamps

TOURAINE
Starter, Dynamo, Lamps

TUDHOPE
Starter, Dynamo, Lamps

VELIE
Starter, Dynamo

WHITE
Lamps

WINTON
Dynamo, Lamps

Other Good Cars Will Carry GRAY & DAVIS Equipment As The 1913 Season Advances

Contracts with additional manufacturers are now being closed. The automobile buying public realizes the excellence and quality of this equipment. Prospective car purchasers demand the best. That is why you will find these products on America's leading cars for 1913.

Electric Starter (6 volts)

A marvel of simplicity. The most powerful of *all* starters. There are no complicated controls. Only requires the usual 6 volt battery, charged automatically by dynamo. Starts a car under any conditions even in zero weather. Spins 6-cylinder car 1½ hours—propels it 2 miles. If car is stalled, you press pedal and car is propelled by the Starter.

Lighting Dynamo

Lights lamps, charges batteries, provides current for powerhorn, speedometer light and electric starter. It saves cost for recharging batteries and gas tank. Lights the lamps irrespective of the condition of the battery. It possesses the *Constant Speed* feature which insures unvarying, constant voltage.

Electric Lamps

GRAY & DAVIS Electric Lamps are the result of 16 years of lamp building experience. They are lamps of *Quality*. They produce the most brilliant light, and enhance the value and appearance of any automobile. If you seek handsome lamps, if you desire an additional factor of safety—specify GRAY & DAVIS Electric Lamps.

You Want The Best!

Demand GRAY & DAVIS Equipment on the car you buy.

Write For Complete Information

GRAY & DAVIS, Inc., 55 Lansdowne St., BOSTON, MASS.

Manufacturers of Automobile Lamps, Dynamos and Electric Starters.

Looking up Market Street in the heart of Philadelphia

One of the finest approaches to a city in the world—Upper Broadway, New York, near Yonkers

Boylston Street, Boston, with a view of the Common

neighborhood as steep as any gradients in the Alpine passes, and the autoist need not go farther than Westchester County to get himself in training for the climb over the Stelvio Pass in the Tyrol, which is the highest carriage road in Europe and one of the most difficult driving feats to which a motorist can put his engine.

Compared with London or Paris, New York, with its long, straight avenues and numbered cross streets, is an easy city in which to find one's way about. While the traffic is heavy, it is better regulated than anywhere else in the world outside of London. A special appeal to the automobilist is the ease with which he can leave the heart of the city and reach any of the main roads leading into New Jersey, Long Island, New England, or the north. The streets leading to the Jersey ferries can be found without effort, and as they are always under repair they are always bad. The Boston Post Road and the other routes to New England are now reached by the new Concourse, one of the finest approaches to a city that can be found anywhere in the world. With the building of the new bridges, the ferries to the roads on Long Island have been abandoned by the automobilist, while the Albany Post Road and the highways leading into Westchester County are reached by the beautifully smooth pavement of upper Broadway, which is another city approach, or exit, as you like, which has no equal among the Continental capitals.

Few difficulties confront the motor-car driver as he leaves Chicago. With Michigan Boulevard to the south, Jackson and Washington Boulevards leading to the west, and the Lake Shore Drive and Sheridan Road to the north, the city has some well-planned and imposing approaches. They are well lighted and paved, and wherever the splendid boulevards intersect a large red bulb is placed in the center of the driveway. Sheridan Road, which skirts the shore of Lake Michigan and leads practically all the way from Chicago to Milwaukee, is one of the finest automobile drives in America.

ALONG CHICAGO'S NORTH SHORE

IT PASSES through Evanston, Glencoe, and Highland Park, all attractive suburban towns, and with the constant views it affords of lake and forest and hillside, it is easily the most beautiful route out of Chicago. There is only one congested section of the city where it is impossible for the motorist to avoid the heavy traffic—I refer to the wholesale district south of the Rush Street bridge. But the promoters of the "City Beautiful" have solved this difficulty, and are planning an enormous viaduct which will carry fast-moving north- and southbound traffic from the end of Michigan Boulevard above the vans and trucks to the Lake Shore Drive on the other side of the river.

Boston has no such splendid boulevards, but once in its beautiful suburbs, the roads are excellent, no matter in what direction the motorist may be driving. In fact, Massachusetts and New Jersey are the only States with which the writer is familiar where the roads in any way compare with the "Routes Nationales" of France. The road to Providence by Columbus Avenue and Dedham, to the Cape by Harrison Avenue—a bad pavement to the city line—to the north shore towns through Somerville, Middlesex Fells, and Malden, and to Worcester, Springfield, and New York by way of Commonwealth Avenue to the famous Boston Post Road, are easily reached once the center of the city has been left behind.

Philadelphia is also situated among some beautiful suburbs and excellent roads, and once out of the crowded business district, its streets are generally wide and well paved. It is easier to find the road to New York by following North Broad Street than for the stranger to take the alternative route by which he must drive through the heavy traffic of Walnut, Chestnut, or Market Street and take the ferry to Camden.

These are some of the exits of our four largest cities; the automobilist has small need in any of them for a booklet on the order of the useful volume by Lord Montague which he calls "The Best Roads Out of London."

But what a complicated matter it is to find the really good roads out of Paris, when it takes weeks of exploring to know how to reach any of the "Routes Nationales" and avoid the "pavé," the cobblestone blocks that make most of the approaches to the city a source of discomfort and dismay to the automobilist! On my recent arrival—during seven years of continental touring I have entered Paris from every point of the compass—I endeavored to avoid what I knew in the past to be an exceedingly bad stretch of road from Melun to the Porte d'Italie.

THE LABYRINTH OF PARIS SUBURBS

AFTER tacking to and fro among the truck gardens and the unlovely villas of the suburbs, we were finally stopped in a narrow road by a series of posts that prevented the venturesome driver from landing in the river Seine. We had to back a quarter of a mile out again, finally falling into the hands of a couple of bicyclists, who, though they looked like the dreaded "Apaches," good-naturedly conducted us back to the road we had tried to avoid, which had been recently repaved and proved to be the best way out of Paris to the south. On another occasion, some years since, I had a similar experience at night. We were coming from Boulogne, and for some reason missed our way and for hours floundered about in cabbage patches and deserted gardens. Though the lights of Paris were reflected in the sky directly ahead, it was after midnight before we found the main road again and drove through the gates of the city.

The "Corso" in Rome, a broad and attractive motorway

The newly paved road just mentioned, from the Porte d'Italie to Melun—it is what the auto guidebooks call "bon pavé," which usually means an excellent surface—and the road to Versailles through the Bois and Suresnes are the only ones I know out of Paris to any of the "Routes Nationales" where the autoist can be sure of a good pavement until he is well beyond the environs of the city. On all the others—Route Nationale No. 1, which is the ancient road to Belgium and England via Pontoise; No. 3, to Germany via Meaux; No. 7, to Switzerland via Fontainebleau; No. 20, to Spain via Etampes, with the routes to the Château country and the Breton coast—the rough "pavé" ends at varying distances from the city's gates. On the road to Belgium it extends as far as Pontoise (29 kilometers), to Germany as far as Meaux (45 kilometers), while if the automobilist is unfortunate enough to take the wrong turn after passing the Porte de Picpus on his way to the east, he will encounter a bumpy, cobbled road that will rattle his teeth all the way to Nangis (58 kilometers from Paris). The bad road from the Porte de Neuilly to St. Germain can be avoided, however, by following the route to Versailles just mentioned. A little beyond Suresnes there is a sharp turn to the right up a short hill which leads to an excellent road to Rueil, where it crosses the main highway, and after a turn to the left reaches St. Germain by a heavy climb up the hill beneath the castle.

From the above it is evident that while Paris is the center of the greatest system of highways in the world, there are at present only three ways of reaching them from the center of the city without bumping over rough pavement that shakes an automobile from head lamps to luggage rack. The difference between New York and Paris in this respect would seem to be that the former is blessed with smooth pavements in the city and generally bad ones beyond, while Paris has notoriously bad roads through its environs, which become better the farther the autoist drives from the capital.

With the abolition of tolls on the Queensboro and Williamsburg Bridges, the New York automobilist encounters none of the vexatious delays that would mark his sortie from Paris—I refer to the "octroi," which is a barbaric relic of feudal days. Automobilists arriving in Paris for the first time are taxed on every litre of "essence" in the gasoline tank. Once inside the city no further duty is levied, provided that every time he leaves it the driver stops at the gate, has the gasoline measured, and receives a little pink ticket stating the amount. He, of course, promptly fills his tank in the suburbs—the "bidons" of gasoline are displayed near the gates on all the exits from Paris—and it sometimes requires nice calculation to return to the "octroi" with the same quantity that the ticket calls for. This measuring process is sometimes so slow that in the busy hours long processions of automobiles are lined up at the gates while the officers leisurely perform their duties.

THE TRAFFIC REGULATIONS OF EUROPE

THESE officers, by the way, like the majority of French Government employees, are distinctly superior, if not actually discourteous, in their attitude toward the public, which would not be so remarkable were they not the representatives of a country where politeness means so much. On the other hand, the Paris policemen are courteous and attentive, though they lack the splendid appearance of the London "bobby" or the New York patrolman. Except when on traffic duty, they travel in pairs—each one, as some one facetiously remarked, protecting the other. They are clothed with authority, but exercise it so seldom that, with the exception of the principal thoroughfares and boulevards, automobiles and other vehicles run wild over the streets with a complete contempt for the rules of the road. We have nothing like this in New York—barring always Eighth Avenue from the Circle to 110th Street, which, with its double line of car tracks on one side and its vans and trucks swinging from one curb to the other, with an utter disregard for traffic rules and the safety of others, is the most disgracefully policed big street of the writer's acquaintance.

In this connection something about the traffic regulations in Europe may be of interest to automobilists. The general custom all over the Continent is the same as it is here—to pass vehicles coming in the opposite direction to the right and those overtaken to the left. In Great Britain, in certain provinces of Austria, and

Elgin victor—1911—last stock championship race held in America. Average 66.4 miles per hour. Entire race run without a tire change. Defeated cars of much greater cost.

National 40

Five Models—Improved Series V

Semi-Racing Roadster. Speedway Roadster. Five and Seven Passenger Touring Cars and Toy Tonneau

$2750 to $3400

Limousines—Coupes and Sedans

Fastest 500 miles ever traveled. Actual running average 81.72 miles per hour—winning International Sweepstakes, defeating more costly American and European cars. Breaking previous record by 4.11 miles per hour.

Combines Luxury and Utility

The National car is the epitome of years' work to combine luxury and reliable service.

Twelve years of concentration guarantees your National car.

Beneath the surface beauty is perfection in design and materials—dependability, stamina, and flexible power that is indefatigable.

The stately elegance of the National—its richness in appointments, comfort and ease make it acceptable to the most discriminating.

We claim—this is the best car to own—and best for Dealers to sell—Write us for proof

Long stroke (4⅞ x 6) flexible and noiseless Motor with enclosed valves.
Left Side Drive. Center Control.
Gray & Davis Electric Starter, easily operated by simply touching a button with foot.
Gray & Davis Dynamo Electric Lighting System.
Bosch dual double Magneto.
12-inch Turkish Upholstery.
Full heavy nickel Trimmings.
Electric Horn.
Adequate Baggage-carrying Compartment concealed in body but easily accessible.
Powerful and reliable Brakes.
Spacious Interior.
Tire Pump, integral part of the motor. Inflates a tire in three minutes.
Truffault-Hartford Shock Absorbers in rear.
128-inch Wheel Base.
Adjustable, ventilating and rain vision Wind Shield.
Multiple jet Carburetor.
Hoffecker steady-hand Speedometer.
Tire Carrier in rear.
Silk mohair Top, Cover and Curtains.
Full-floating Rear Axle.
Resilient Springs, 3-4 Elliptic in rear; Semi-Elliptic in front.
Large gasoline pressure-feed Tank with Gauge in rear.
Robe Rail and Foot Rest.
Foot Mat in Running Board.
Plain, continuous enclosed Metal Guards.
Easy riding qualities, unexcelled.
Oiling System, demonstrated to be only perfect oiling system.
Tools, in concealed tool box under dash.

Quick Delivery — *National* Motor Vehicle Co., *Indianapolis,* Ind. — Write for Catalog today

in most of the big Italian cities the opposite is the rule, which is a more sensible custom than ours, since, with the driver sitting on the right, he is in a better position to judge the space in which to maneuver through traffic, and the passenger in the front seat does not have to descend into the street when the automobile is drawn up with its left to the curb.

There is some talk of adopting the English custom in Paris, but if this is done, it is to be hoped that the rule is extended through all the provinces of France. At present the confusion arising in Italy because the custom in the country is to pass to the right, and in Rome, Genoa, Milan, Turin, Brescia, etc., to take the opposite side, has brought about a condition that is both annoying and dangerous to automobile drivers, who can never tell at what distance beyond the city gates the country rule becomes effective.

Italy is becoming one of the most popular of European countries among automobile tourists, and some effort should be made to bring the town and the "campagna" together about the rules of the road.

ROME AND THE CITIES OF ITALY

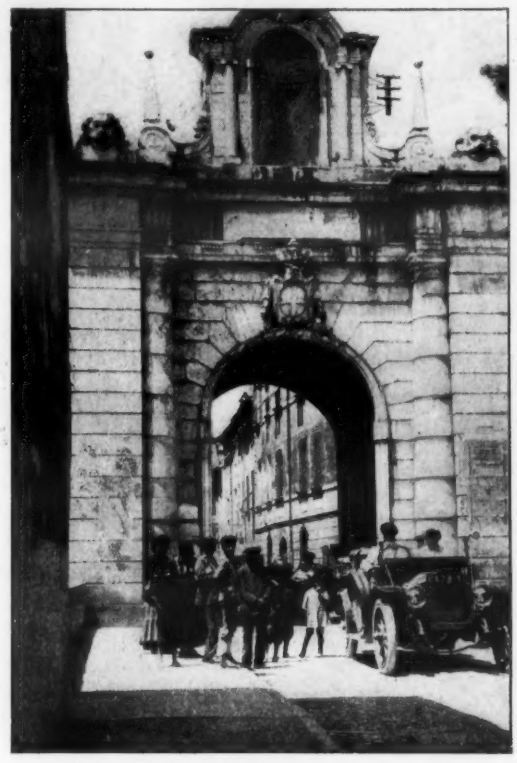
IN ROME the police are a splendid body of men, tall, like all the Romans, and they enforce the regulations rigorously. The principal exits of the city—to the historic Appian Way by the Porta San Giovanni and to the Umbrian Mountains, and Florence on the north by the Porta del Popolo—are easy to find, but, like all the big European capitals, the roads are exceedingly rough for the first fifteen miles beyond the gates. The approaches to Florence, Genoa, and Milan are equally bad, and the traffic in each of these cities not so well handled as in Rome. Venice is reached by the automobilist with more comfort than the other Italian towns, because the roads from either Bologna, Verona, or the Tyrol are splendid to Mestre, on the mainland, where a motor boat carries the tourist across the most beautiful approach to a city imaginable—over the lagoon and up to his hotel through the Grand Canal.

Some of the smaller Italian towns, in their effort to control the speed of automobiles through the streets, have posted signs on the dead walls in the outskirts warning the driver that he must not go "faster than the little trot of a horse." One can hardly blame him for not knowing just how fast that pace would be.

The uncertainty about the rule of the road in Italy is avoided in Austria, where, with commendable forethought, the automobile driver, on crossing the frontier, is handed a small colored map which shows green for the districts where vehicles pass to the right—Tyrol, Kärnten, Küstenland, and Dalmatia, and pink for all the rest of the country, where the opposite custom is in force. One of my photographs, which was taken in the snow fields on the Stelvio Pass, shows the beginning of the descent into Austria from the summit, with a road sign in Italian: "Tenersi à destra" (take to the right).

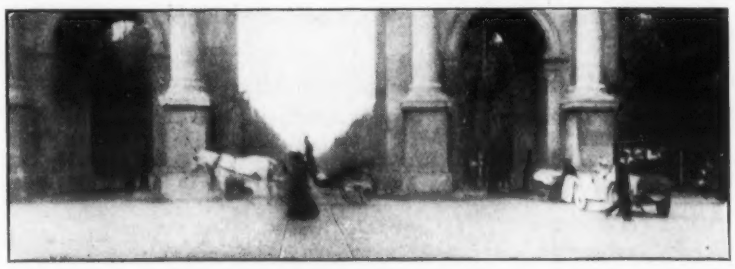
IN AUSTRIA

THE Austrians leave no stone unturned to have their road rules understood. Their police, too, are efficient, and the approaches to the larger cities—Vienna, Budapest, Innsbruck, and Prag—are better than might be expected. It was interesting to discover a small case of graft on my recent tour in this well-governed country. Austria demands a heavy deposit—over $400—for automobiles, which is returned when the tourist recrosses the frontier. The amount must be paid in gold—if the autoist has not provided himself with a "triptych" before leaving his own country. The landlord of our Venetian hotel heard me regretting the fact that I had not paid the money and secured this document in New York and was forced to carry $420 in gold coins in my pockets on leaving for Innsbruck. He pressed a note of introduction on me. It was addressed to the chief customs officer at the frontier post through which we were to pass. With this letter, he said, I need make no deposit whatever. I had only to tip the officer a "louis" ($4) and he would pass my automobile through. The letter was never presented; it is before me now, with the postscript, in Italian, "and he will pay you twenty francs." We made the deposit in cash, with the virtuous determination to abstain from grafting—and because, with the limited knowledge of German at our command, we were afraid of the consequences if our bribe had not been received in the spirit in which it was offered.



Leaving an Italian town, Sarzana, near the Carrara marble quarries

Germany is a military country, ruled by a war lord, and, as might be expected, the official control of the automobile traffic is very thorough. The driver, on crossing the frontier, is handed a "Steuerkarte," a license to drive good for one year, and with it a copy of the road rules and regulations. There is a wholesome fear of the German police officers, the "Polizei." Their lieutenants sometimes sit as judges, and the force has punished reckless driving so frequently that accidents are less common than in other European countries. The order to go slowly is found on the entrances to all the small towns, and is usually observed by the German automobilist, who is more often than not a law-abiding citizen. The Germans are not noted for their courtesy, but the fact remains that passing automobilists invariably politely salute each other, and drivers of trucks and farmers' carts are willing to concede a portion of the road to the automobile.



"The Gate of Victory," one of the exits of Munich, Germany

Munich, the capital of Bavaria, which is one of the most beautiful cities in Germany, is surrounded by some splendid roads which radiate in every direction from its center. Its streets are well paved—in the older parts of the town they are very narrow—and the busy and hustling traffic is handled with less confusion than one would expect in a city of its size. A wide, straight highway, the Lindwurmstrasse, is the smoothly paved exit to the south, and another, the Ludwigstrasse, leads out of the city through the Siegesthor, or Gate of Victory, to the north. Berlin is the least confusing of the European capitals in which to find one's way about. Compared with the others, it is a modern city, with beautiful parks and monuments, the streets are generally wide and imposing, and laid out so regularly that from the center of things in Unter den Linden and the hotel district the exits toward the country in every direction can be found without the assistance of the small boy who invariably proffers his services as guide.

THE DIFFICULTIES OF LONDON

LONDON, on the contrary, is a maze. Even to motorists who are familiar with the city the network of narrow streets, parks, lanes, and bridges offers a constant puzzle as to the best ways to reach the country roads, while the only hope for the stranger is to make a careful study of his maps—and then engage the services of some retired cabman as a pilot. Lord Montague's little book, before referred to, may prove a useful asset. He gives some valuable information, not only about how to get out of the town but how to avoid it entirely when one is touring in the neighborhood. To reach the Great North Road, he advises the autoist, on leaving Piccadilly Circus, to follow Regent Street and the east side of Regent's Park through Avenue Road to Finchley. The Brighton Road, from the same center, is harder to find if one wishes to take to the back streets and avoid the congested traffic and the tram lines in the suburbs, while to reach any of the other famous coaching highways—the Dover, Portsmouth, Holyhead, Exeter, or Bath Roads—your foreign automobilist must keep his wits about him to avoid losing himself in the endless confusion of the London streets. Paris, Rome, Berlin, Vienna, Madrid, New York, and Chicago are all plain sailing for the automobile driver as compared with London, and the ways in and out of the English capital would be still more difficult were it not for her splendid traffic police.

London "bobbies" are a fine set of men, physically strong and alert, though they lack the height of our Broadway or Fifth Avenue squads in New York. On the score of politeness and dignity they have no equals anywhere, and when it comes to "graft inquiries," the English police as a body are above suspicion. Anyone who doubts this should be reminded of the case of the American automobilist who, some years ago, was caught in a police "trap" on the outskirts of Guildford.

POLICE TRAPS

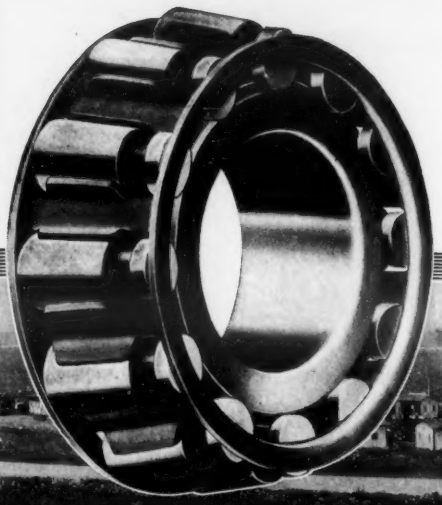
AFTER an apology for speeding he offered the officer two pounds to "let the matter drop." When arraigned in court the next morning, he was fined ten dollars for speeding and three hundred and fifty dollars for attempting to bribe a police officer in the discharge of his duty.

Though there are many of these police traps in the country, the laws affecting the automobilist in London itself are lenient enough. The tail light must always be kept lit after dark, but the autoist can choose his own pace through the London streets, provided he does not drive to the public danger. There is an eight-mile limit through the parks, however, and here the only way to insure against arrest is for the automobilist to fall in behind a horse-drawn vehicle and stay there.

The snowdrifts at the summit of the Pass at the frontier of Austria and Italy

The Portsmouth road beyond Guildford, one of the most traveled roads out of London

TIMKEN
AXLES & BEARINGS



Read Your Answer in the Cars

DO Timken principles of axle and bearing construction work out in practise? Are their merits acknowledged by the leading motor-car builders?

These questions are natural and just. You have read the Timken stories of axle and bearing importance in previous advertisements.

You have felt, as you read, that Timken principles were right, that they must have proved right on many a steep hill and stony road.

Nor did you err, for hundreds of thousands of Timken-equipped motor-cars, pleasure and commercial, are daily demonstrating the worth of Timken principles and Timken construction.

At the points of severest service—there you are most likely to find Timken Equipment.

Because front axles and the bearings on their spindles *must* stand up to the tests of every day travel and meet the emergencies, builders of good cars dare not take chances at these vital points.

On the right are listed nearly all of the cars using Timken Tapered Roller Bearings and Timken-Detroit Axles. Among them, you will agree, are most of the best known and highest grade cars made in the country.

All of the makes of cars listed here use Timken Bearings or Axles on one or more models, throughout or in part.

To be specific, 97¼% of all these cars have Timken Bearings at the points of severest service—on the spindles of the front axle.

In addition to that, 93⅛% of the entire list have Timken Axles or Bearings at all or some of the following points: rear axle, rear wheel bearings, differential and pinion-shaft bearings, transmission bearings, commercial rear axle and jackshaft and their hubs and bearings.

Also 61⅛% of the pleasure cars and 72⅛% of the commercial cars listed at the right have Timken-Detroit Axles, front or rear or both.

Coming back, then, to the questions: "Do Timken principles of axle and bearing construction work out in practise? Are their merits acknowledged by the leading car builders?

You can read your answer in the cars.

A Timken-Detroit Front Axle for Pleasure Car

On the spindles and bearings of the front axle are concentrated the severest shocks, stresses and vibration of motor-car service.

THE TIMKEN ROLLER BEARING CO.
Canton, Ohio

THE TIMKEN-DETROIT AXLE CO.
Detroit, Mich.

Below are listed most of the cars using Timken Tapered Roller Bearings and Timken-Detroit Axles, throughout or in part.

PLEASURE CARS

Abbott-Detroit — Amplex — Atlas-Knight — Bartholomew—Buffalo Electric—Cadillac—Case—Chalmers—Chicago Electric—Colby—Cole—Columbia—Columbus Electric—Crawford—Cunningham — Detroit-Electric — Diamond-T — Dorris — Edwards — Flanders—Franklin—Great Eagle (U. S. Carriage Co.) — Haynes—Kissel-Kar — Knox — Lexington—Locomobile — Lozier—Marion—Marmon—Mason — Mason-Seaman Taxicab—Matheson—Maxwell Special—Middleby—Mitchell—Moline—Moon—Moyer—National — Overland—Packard — Palmer-Singer — Peerless—Pierce-Arrow—Pope-Hartford—Premier—Pullman—Rauch & Lang—Reo—Reo (Canada)—Russell (Canada)—Shaw Taxicab—Simplex—Speedwell—Stafford—Stanley Steamer—Stearns-Knight—Stoddard-Dayton—Stutz—Thomas—Tudhope (Canada)—Velie—Walker—Waverly Electric—Westcott—Winton—and many others.

COMMERCIAL CARS

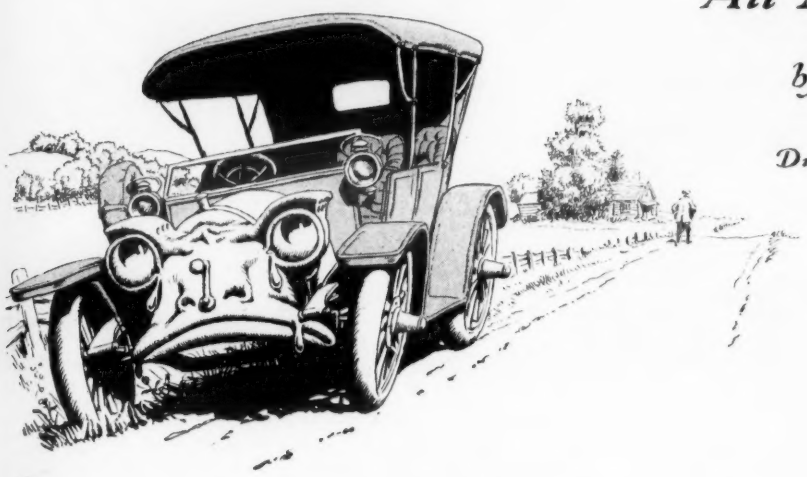
Ahrens Fox Fire Engine—Alco Truck—American-La France Fire Apparatus—Atlantic Electric—Atterbury — Autocar—Avery—Baker Electric — Bessemer—Bronx—Cass—Commercial Truck of America—Dayton Auto Truck — Detroit-Electric — Dorris — Federal — Four Wheel Drive — Garford — General Vehicle — Grabowsky — Gramm (Lima) — Gramm (Canada) — Gramm-Bernstein—Harrison — Hewitt (International Motor Co.)—Ice Mfg. Co. "A.I.C."—Kissel-Kar—Knickerbocker—Knox—Lansden Electric—Lewis—Lippard-Stewart—Locomobile—Lozier—Mack (Internat'l Motor Co.)—Mais—Marathon—Martin — Mather Funeral Car — Moeller—Mogul—Moore — Moreland—Morgan — Oliver — Packard—Packers—Peerless—Pennsylvania R. R.—Pierce-Arrow—Pope-Hartford — Randolph—Rapid—Reliance—Reo — Rowe—Sampson—Schacht—Seagrave Fire Apparatus — Speedwell — Standard — Sternberg — Stewart — Stewart Iron Works — Studebaker — Toledo—Transit—U. S. Truck—Universal—Velie—Victor — Vulcan—Walker—Ward — Waterous Fire Apparatus—Waverly Electric—Webb Fire Apparatus—Wilcox—Woodworth—and many others.

Best Cars in Creation Have a Timken Foundation

An Automobilogue

by Wilbur D. Nesbit

Drawings by Rodney Thomson

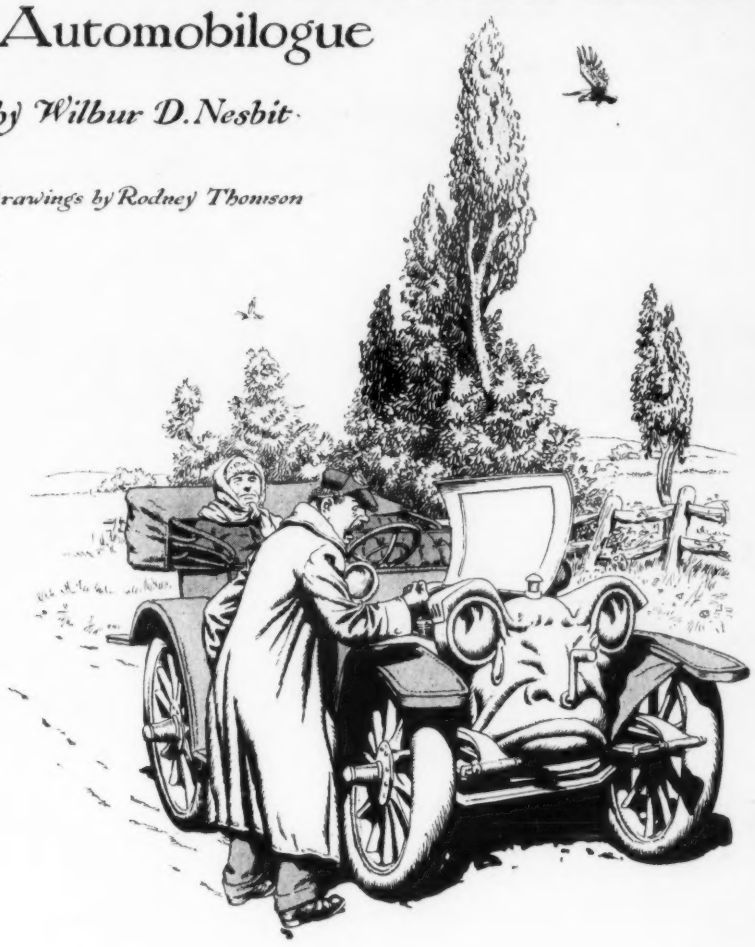


1

The auto stood beside the road—all mournfully it stood,
With wheels a-limp and sorrow in the drooping of its hood.
"O woe is me!" it gasped and wept, and "Woe is me!" once more.
"Injustices of many sorts have cut me to the core.

2

"They take me out to have a ride—and suddenly, alas!
They find that through an oversight I haven't any gas.
Who gets the blame? Do they themselves? That's how the case should be,
But, on the other hand, they hoot and howl and curse at **me**.



3

"Ahead of me I see a place where glass is on the path—
A puncture comes, and instantly there is a time of wrath.
Instead of censuring the one whose duty t'was to see,
They curse the tire man, curse the tire, and double-dash-blank **me!**

4

"Transmission troubles will occur, unless ere they commence
My owner exercises care and likewise common sense;
But what cares he? The clutch gives out, and all that he can see
Is just another chance to put the guiltiness on **me!**

5

"My carburetor gets choked up, a cylinder will miss—
My owner tears his hair and yells, 'What do you think of this?'
He yanks me with a monkey wrench and howls aloud that he
Has never seen a bunch of junk that ever equaled **me!**

6

"He lets me skid; he will not feed me properly with oil;
He overlooks the water and I then begin to boil—
And does he then condemn himself? Not much! In raucous key
He uses all his cuss words in some brief remarks at **me**.

7

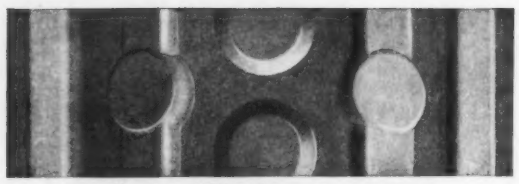
"I wish I were a horse or mule, for then I'd get some care,
But autos have to stand for all the evils they can bear."
The auto wept again and said: "Here comes my owner—he
Is stuck because of his own fault. The blame will come to **me.**"

HEAVY CAR TYPE

FISK

Town Car Tread Tires

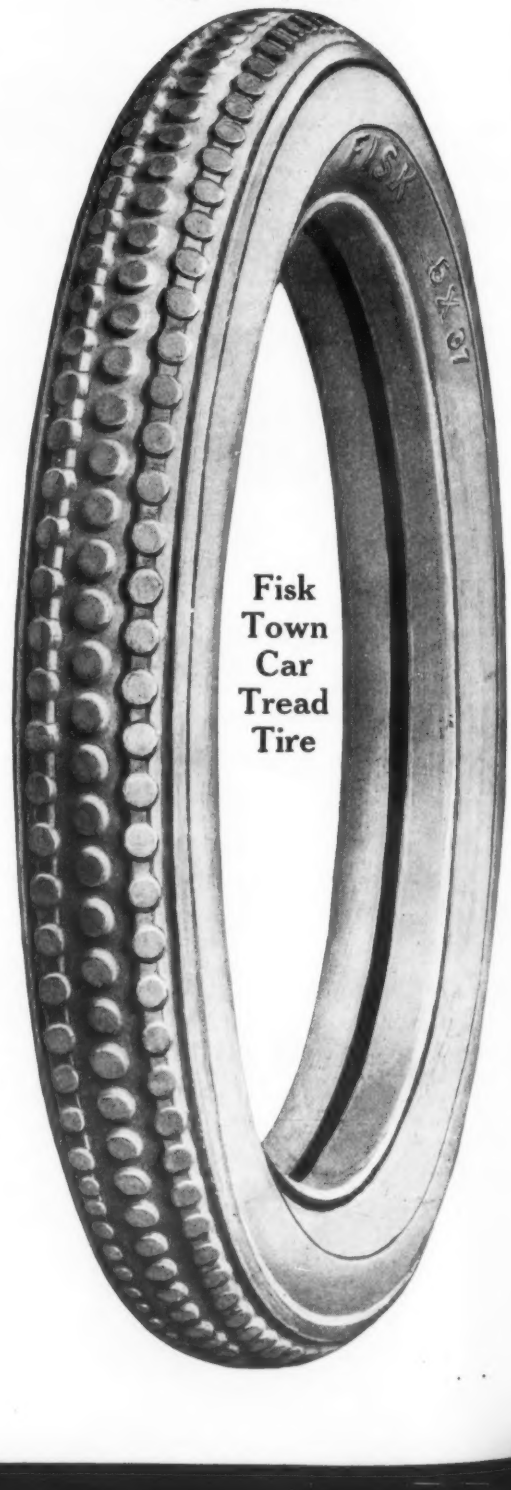
For Safety and Service



Section of Fisk Town Car Tread
Showing arrangement of rubber knobs and ridges. Note the clean-cut, substantial appearance.

THIS tire has been successfully built in all honesty of purpose to meet your requirements for equipment which will afford safety from skidding and slipping on wet pavements or muddy roads. Knowing well the urgent demand for such protection, we were not content to rush into the market with a "freak tire" or one which served solely to tempt a customer to buy because of its departure from the familiar smooth tread.

A real non-skid tire of true Fisk Quality. Why not try one?



Our effort has been to actually solve the problem you have to meet in daily running at certain seasons. We have carefully borne in mind principles which must be followed to insure an effective gripping surface and each rubber button and heavy corrugation has a real reason for the position in which it is placed. Our aim has been not only to furnish the non-skid element but to produce a casing that would have strength as well as safety.

We do not claim the impossible for this Town Car Tread Tire. We do maintain, however, that it will show all the resistance to sliding and slipping that can be built into any tire and that in actual performance it is outdone by no other. It supplies reassuring traction and prevents skidding on slippery pavements. It is a most attractive tire to look upon and, as an equipment on any car, lends that air of completeness and readiness for emergencies which every owner desires.

Cross Section of Fisk Town Car Tread Tire
Showing inward construction not revealed in exterior view of complete casing. Note thickness of tread, re-inforcement of side walls, arrangement of fabric, etc.

The FISK Exclusive and Original **HEAVY CAR TYPE CONSTRUCTION** is particularly suited to a non-skid tire and the unusual strains and stresses to which it is subjected. This construction insures an extra layer of rubber on the tread, two breaker strips instead of one, and a *balanced tire* into which is built the strongest resistance to road wear.

We Have Literature Describing the Entire Fisk Line Which Will be Mailed Free to Any One on Request.

THE FISK RUBBER COMPANY
OF N. Y.
Department P **Chicopee Falls, Mass.**
Branches in Forty Cities

Motor Transportation

One of the Greatest Single Agencies in the Future Development of Large Communities

By ROLLIN W. HUTCHINSON, Jr.

IT HAS now become a platitude among writers on motor transportation to say that the motor truck has come to stay. If one will but analyze the following figures given us by Mr. H. W. Perry, Secretary of the Commercial Motor Vehicle Committee of the National Association of Automobile Manufacturers, it will be obvious that no other single new transportation agency has had so rapid and so healthy a growth as the commercial branch of the motor-vehicle industry.

Motor trucks and delivery wagons have now been manufactured and used in the United States for fifteen years. A number of companies have been making them consecutively for ten or twelve years. Electric trucks are still in use after having seen regular service in the brewing and express business for more than ten years. State registrations show about 50,000 users of commercial motor vehicles in this country.

(Estimates of the number of vehicles in actual service vary from 20,000 to 40,000.)

AN ENORMOUS INCREASE

THE "wheel-tax" registrations of Chicago show that the number of motor trucks in that city increased from 788 on February 1, 1911, to 1,439 on February 1, 1912, or an increase of 82.6 per cent in one year. The number of horse-drawn wagons in Chicago decreased in one year 3,000.

That makers are anticipating a rapid development in the demand for trucks is indicated by the fact that more than 250 companies are now offering them in the market. At the shows in New York and Chicago last winter 100 different companies displayed models of trucks and delivery wagons. Many new companies are marketing products for the first time this year. Most of the older companies have prepared to increase their output, in most cases by several hundred per cent. Reports from fifty companies contained in an incomplete census now in progress indicate that the output for last year nearly equaled the production, and exceeded the valuation of all preceding years. In 1911 fifty companies built 4,500 machines valued at $9,121,000 as compared with 4,790 valued at $7,394,500 built prior to last year.

What are the reasons for this enormous increase? This matter demands the most careful consideration of every business man.

It is certain that no system or means of transportation will continue to justify the investment of large sums of money unless it results in economy in transportation.

The conclusion is inevitable that the motor truck has been indorsed by the public as economical in the handling of transportation in a vast number of cases.

The reason for the success of the auto truck may briefly be summed up in the statement that where conditions are favorable the auto truck will do more work at less cost than any other form of transportation.

WHERE CONDITIONS ARE FAVORABLE

YOU notice that I say this is true "when the conditions are favorable." This is the whole pith of the matter. At the same time there must be a vast number of cases where these conditions are favorable judging from the enormous number of trucks now in successful operation.

Before considering the conditions which make possible the economical operation of trucks, I wish to mention some of the developments which will surely come about in the truck business.

Probably the most serious problem confronting the railroad companies to-day in the handling of freight in our large cities is the congestion of their freight terminals. The amount of freight to be handled is increasing by leaps and bounds. The cost of increasing terminal facilities where this requires the purchase of additional property in the vicinity of the present terminals is in many cases almost prohibitive. The situation is rapidly becoming critical.

A RELIEF TO FREIGHT TERMINAL CONGESTION

WHAT can be done when the area of the terminal cannot be economically increased and when the volume of freight to be handled is rapidly increasing?

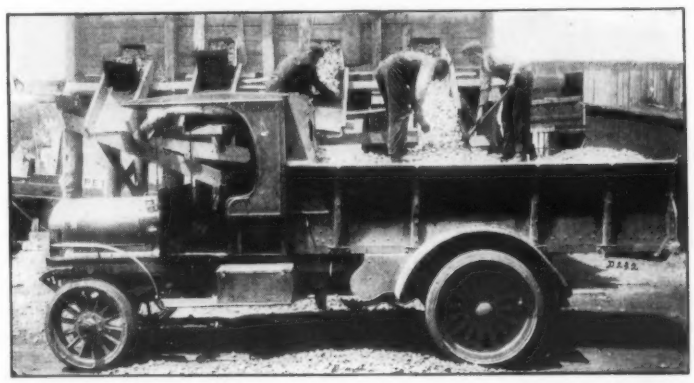
These are not dreams of future conditions but are *live* problems pressing for solution *to-day*. It is safe to say that nearly everybody interested in transportation has been approached by large handlers of freight to assist in the solution of these problems.

Only three methods of relieving this situation are possible.

1. New methods of handling freight may be devised to make the use of the present terminal space more efficient. This is now engaging the attention of the best railroad engineers and promises some temporary relief.

2. Railroad freight terminals will be established at a greater distance from the congested cities. This will make a longer haul necessary for the distribution of the freight, a condition favorable to the use of automobile trucks.

3. Some of the short-haul freight now passing through these terminals will in the future cease to be handled by the railroads.



A seven-ton truck doing the work of eight mule teams in the construction of macadam road

This third point is very important to those interested in the trucking business.

The day will shortly come, in fact it is already here, when the railroad companies will be glad to be relieved of the handling of such short-haul freight as can be economically handled by automobile trucks.

A carload of freight coming from a distance of 15 miles occupies the same space in the yards at the terminal as does a carload coming to the terminal for a distance of 1,000 miles. The cost of handling the short-haul freight at the terminal is practically the same to the railroad company as for the long-haul freight, and the congestion at the terminal is such that the railroad company will in most cases desire to use all terminal facilities for long-haul freight, the handling of which is so much more profitable to the railroad company.

Companies organized for the handling of the local express service by auto truck are springing up, and the fact that some of these companies are continuing to handle the business show that there is a demand for such service. At present most of this freight is first hauled by horse trucks to the railroads and again is hauled by horse trucks from the railroads to its final destination.

When the auto truck is used the freight is loaded on the truck at the originating end and is delivered to its final destination without rehandling.

Who is to handle this business?

The teamsters who are now handling the short-haul work in connection with this service have an enormous advantage in securing the long-haul business when handled by auto trucks.

A new company formed for this service must learn how and from where this freight is to be obtained and must build up a clientele.

The teamster already has the knowledge of the present method of handling the freight and the movers of the freight are already his customers.

All automobile truck manufacturers are continually approached with propositions for the renting of trucks. This is particularly true in the case of contractors who are buying auto trucks for use in many places because they cannot rent trucks. A contractor who is doing work at different points in the country would much prefer to rent auto trucks than to buy them.

The business of renting auto trucks is carried on very extensively and we understand very successfully in Europe, particularly in England, by men who in some cases are teamsters on a large scale and who are known as "truck jobbers."

TRUCKS OF VARIED EQUIPMENT

THE profits from the business in this country should logically belong to the teamster who is ready to handle this business.

It is only very lately that the uses to which the engine on the motor truck may be put in addition to propelling the truck have begun to be realized.

The most common of these is the use of the engine to drive a winch to assist in the loading and unloading of heavy freight.

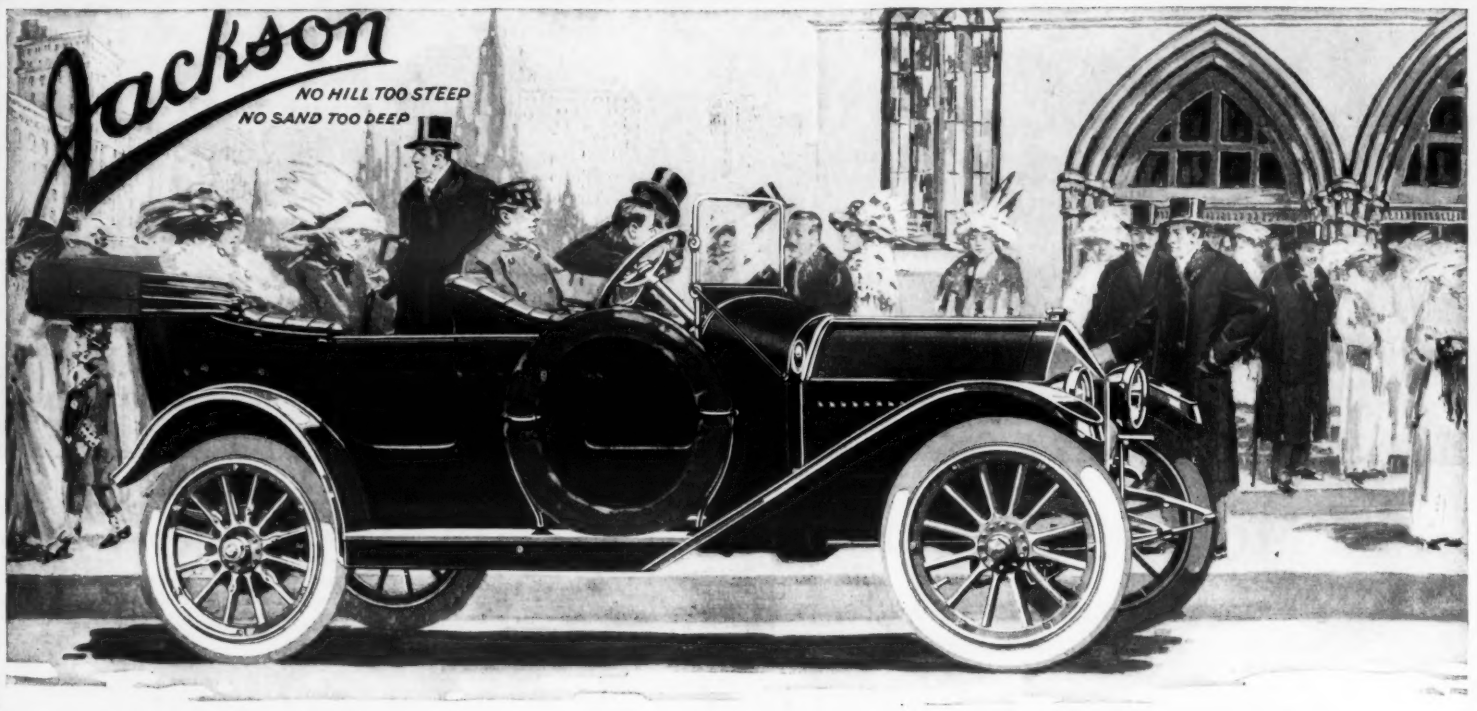
We now have trucks equipped with dumping bodies, in which the dumping of the body may be controlled by the driver without leaving his seat. These bodies and the elevating mechanism are so designed that the bodies may be elevated to any desired point, stopped at this point, and the opening at the tailboard regulated. This device is particularly useful in the handling of crushed stone in road construction. The stone may be spread along the road to whatever thickness is desired instead of having the spreading done by hand.

Auto trucks especially equipped are in use at present in connection with the setting of telephone poles. These trucks are equipped with a device for digging the hole for the pole. When the hole is dug the pole is picked up and set in the hole. Every operation in connection with the setting of the pole, with the exception of tamping the earth around the pole, is done by devices driven by the engine on the truck.

The use of such devices is increasing rapidly and is resulting in the saving of time and money in many instances.

Among other points which might be touched on are the following: *There is no such thing as one point of an automobile truck being so injured as to make the whole truck useless.* When repairs are needed on a truck it is not a question of whether it is possible to make those repairs. The question is what will the cost of these repairs be.

There is nothing that can happen to the auto truck



Cars distinguished for their comfort, even among the most luxurious

Motor car talk this year—among owners and dealers, and at the shows that will dot the country between now and April—will bear strongly on comfort.

And properly, for manufacturers have put forth extra effort to provide for the passengers' ease.

In this they are following in the footsteps of the Jackson Company; for we have devoted years to the development of comfortable cars.

This phase of design and construction has always received, in the Jackson plant, equal consideration with the important details of power, strength, durability and smooth running that are the foundation stones of satisfactory service.

The natural result has been that the Jackson did not lag behind its contemporaries in the latter; while it did maintain an advantage in the former.

So the Jackson has achieved a name for comfort, in addition to its reputation for engineering and mechanical eminence. The two are inseparable in Jackson cars.

Our engineers have been trained to consider the effect of every mechanical detail on the cars' riding qualities; and to design bodies of liberal dimensions.

They specify full elliptic springs all around because these contribute from 33 to 100 per cent more to a car's riding ease than any other type.

They give our cars long wheelbases, always keeping the proper proportion in relation to wheel sizes, springs and weight.

They determine the weight and distribute it so that sidesway is reduced to the minimum and the cars hold the road with steadiness.

The long wheelbases permit the fitting of bodies that are particularly roomy, not only in the tonneau, but in the front as well.

In the seat construction, we use every device that can possibly help to prevent fatigue.

The cushions are upholstered to the rich thickness of 10 inches and slant a trifle to the rear; the seat backs are shoulder-high.

If you can say with conviction, after a ride in the Jackson, that you have ever ridden in a more comfortable car, we will not urge you to choose a Jackson.

Turning to the Jackson's mechanical side for a moment, you find a highly developed unit power plant—silent, smooth-running, compact.

The motor is long stroke, with enclosed valves, which you recognize as the most approved practice; and the other chassis members have kept pace with the motor improvement.

We have no desire whatever to restrict you in your comparison of Jackson cars.

Go as far as you like in the matters of size, price and type.

All we ask is that you see the Jackson; and give us the opportunity of sending you the new catalog.

Jackson Comfort Features

Four full elliptic springs
Long wheelbases
Large wheels and tires
Ten-inch upholstery
Extra roomy tonneau and forward compartment
Inclined seat cushions
Shoulder-high seat backs
Correct distribution of weight
Proper relation of these details, one to the other.

Jackson "Olympic"—$1500

Four cylinders, 35 horsepower; unit power plant; long stroke motor, $4\frac{1}{8} \times 4\frac{3}{4}$ inches; 115-inch wheelbase; 34 x 4-inch tires. Complete equipment, including Disco starter. Black and nickel trimmings.

Jackson "Majestic"—$1975
(Illustrated)

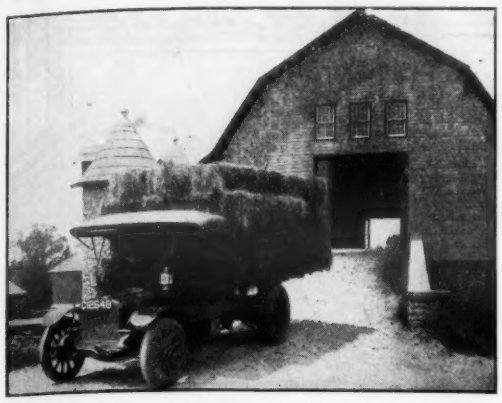
Four cylinders, 45-horsepower; unit power plant; long stroke motor, $4\frac{1}{2} \times 5\frac{1}{4}$ inches; 124-inch wheelbase; 36 x 4-inch tires. Electric starter and lights. Complete equipment. Black and nickel trimmings.

Jackson "Sultanic"—$2650

Seven-passenger. Six cylinders, 55 horsepower; unit power plant; long stroke motor, $4\frac{1}{8} \times 4\frac{3}{4}$ inches; 138-inch wheelbase; 36 x $4\frac{1}{2}$-inch tires; demountable wheels and spare wheel. Electric starter and lights. Complete equipment. Black and nickel trimmings. Five-passenger, $2500.

New York Show—Jan. 11-18—Madison Square Garden, Space 111, Elevated Platform
Chicago Show—Feb. 1-8—First Regiment Armory, Space B-2, immediately to right of Michigan Avenue entrance

Jackson Automobile Company, 1110 E. Main Street, Jackson, Mich.



The motor truck is destined to cut a big figure on the farm. This truck is carrying a 10,000-pound load of hay to market

which is analogous to the breaking of the leg of a horse or the appearance in a stable of a dreaded disease like glanders. In other words, the auto truck can *always* "come back."

The handling of a machine is in many ways more satisfactory than the care of an animal. When the automobile truck is properly used and kept in good condition the work of the owner is done when he locks the door of his garage and he is a free man until it is necessary for him to take up his work again. On Sundays and holidays his time is his own, and during dull times when there is little work to be done, he is not required to give to a machine the constant care and attention which is necessary for the proper care of horses. During periods of heavy work he has at his command a tireless machine which is not affected by the extreme heat of midsummer or the cold and storm of the winter. It may be noted here that during two weeks of excessive heat in July, 1911, over 1,200 horses died of heat in the streets of New York. The increase in the last few years in the cost of feeding horses is another powerful factor in favor of automobile trucks.

The novelty of the motor truck in itself attracts attention, and will for some time continue to do so. Signs on the sides of the trucks which are carried over a wide range are considered by advertising experts to be one of the most effective means of advertising the owner as a progressive and energetic man who should be considered in connection with the handling of freight. In these days of stiff competition and rapid progress the value of such advertising is great.

The question of the cost of operating auto trucks is purposely avoided here, for the reason that general figures on this subject are not very satisfactory, because they cannot be properly used in the figuring of individual cases. Many cases occur where the use of automobile trucks is not economical as compared with horse-drawn vehicles. In some cases the electric vehicle should be used; in some cases the gasoline truck will give the most economical service.

ADAPTABILITY

THE service to be performed in each particular case must be thoroughly understood and each separate case should be carefully worked out.

As before mentioned, the operation of automobile trucks is economical where the conditions are suitable and the importance of the effect of conditions on the cost of operation cannot be overestimated. Cases which seem to be very similar at first sight frequently give very different results when carefully worked out.

In general the conditions which are favorable for the operation of an automobile truck are as follows:

That it should be possible to keep the truck in service the greater portion of the time.

That the truck be kept loaded to its full capacity while in operation.

That the time used in the loading and unloading of the truck be small compared with the time during which the truck is actually running.

That no overloading of the truck be allowed.

That the truck be operated at normal speeds over fairly good roads.

That the handling of the truck when in the garage be under the care of a man who thoroughly understands his business. Such a man will make frequent inspections of each part of each truck and will detect faults when they first appear and will correct these faults by making adjustments or by making simple and inexpensive repairs which are possible at that time. A proper system of handling in a garage will also provide for the thorough overhauling of each truck at intervals determined by the amount of service required of the truck.

That the driver of the truck be carefully selected and trained for this work. The driver of the truck is undoubtedly the *most important* unit in the operation of a motor-truck system. He is in immediate charge of a comparatively large investment and is able to save expense to the owner by constant attention to the way in which he handles almost every detail of his work, such as in the careful running of the truck over roads, in the avoiding of ruts and small obstacles, in the way in which he uses the brakes, in watching the operation of his truck, and reporting immediately to the garage foreman the slightest indication of trouble.

In general the use of an auto truck with the capacity of three tons or more becomes economical when it does the work of from two and one-half to three double teams. As in any other business, success in handling of automobile trucks depends on *good management.*

With regard to the amount of time required for the loading and unloading of a truck as compared with the time that the truck is actually running, this is not always clearly understood, and has given rise to the general opinion that an automobile truck may be profitably used only in long-haul work.

Many cases occur in short-haul work where by the use of suitable methods of loading and unloading the time required for these operations is very small indeed and the truck is running practically all the time. An example of this kind is when sand or crushed stone is loaded in the truck from a hopper in a very few minutes and at the end of a short haul is dumped from the body of the truck in a time which is practically negligible. In such a case short-haul work becomes to all intents and purposes long-haul work.

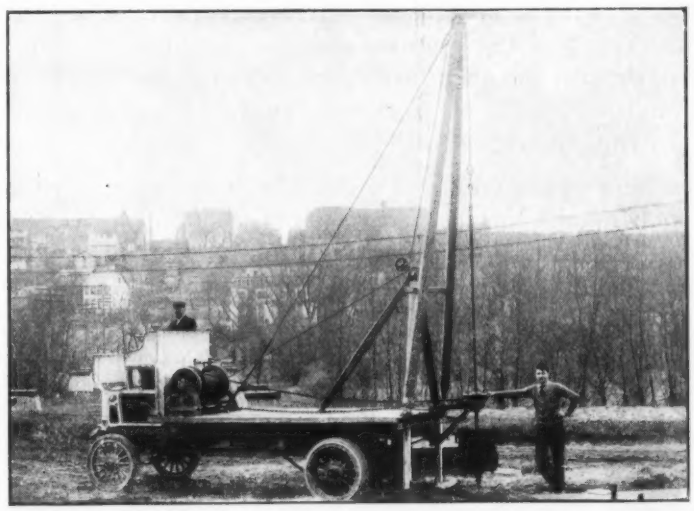
ECONOMY OF LOADING AND UNLOADING

THE importance of obtaining the economy which results from quick loading and unloading has resulted in the appearance of many devices for this purpose, most common of which are the machine-driven dumping device, the removable nest body, the jib crane mounted on the truck, etc.

The main points which should be weighed by any one contemplating the installation of motor transportation are as follows: *There is no one type of truck that will fit all conditions.*

Each case must first be worked out carefully to determine whether automobile trucks *should be used at all,* and if so what type of truck and what capacity and equipment would be the most economical in each instance.

The necessity of making careful studies of individual cases is so well recognized that the principal manufacturers of automobile trucks to-day have in their employ experts who are wholly engaged in making studies of the problems in transportation which are continually arising.



The versatility of the motor truck is in its favor; this picture shows a post-digging and setting attachment operated by the motor

These experts are at your service. They do not claim to understand your business as you do, but they do understand the effective conditions on the cost of operating automobile trucks; and if you will cooperate with them they will make a thorough investigation of your transportation problems and will submit accurate reports on the application of the automobile truck to your business.

If the automobile truck may be economically used in your business it will surely be so used.

If the automobile truck can be so used in your business, the result will be a wide increase in the range and importance of your business and a corresponding increase in the profits to you.

Is it not worth your while to assist in making these investigations?

In taking up this matter with any manufacturer you should of course proceed as you would in handling any other matter of business.

You can easily obtain information on the following points with regard to the manufacture of automobile trucks:

A heavily loaded truck carrying tents and baggage of the "Blue" army in the 1912 army maneuvers

What companies are manufacturing auto trucks on a large scale and have many trucks in successful operation?

What companies are financially strong and may be expected to be factors in this business for years to come?

What companies have the plants and equipment necessary for the manufacture of auto trucks and for the giving of good service to their customers?

Go to the companies who can satisfy you with regard to these points and you will find them *ready and willing* to investigate your conditions and to make *honest reports to you.*

You will find that such companies will not attempt to sell a large number of trucks to you irrespective of whether the conditions of your service warrant it.

You will find that, if they believe you can economically use automobile trucks, they will try to furnish you as nearly as possible the exact number of units of the type and capacity which you can most efficiently use.

The truck manufacturers' interest in the successful operation of any trucks which you may purchase from them is second only to yours. Even if it were possible for the motor-truck manufacturer to sell to you trucks which you could not use economically he could not reasonably expect to make such sales as would pay him in view of the injury which would surely result to his business.

The truck manufacturers want your cooperation and your confidence, and they intend to get both.

The soaring price of good horseflesh, despite the growth of the motor vehicle and the uncertainty of obtaining adequate animal motive power in the event of war, has turned the attention of Uncle Sam's War Department to the motor trucks. During the past three summers more or less practical tests have been conducted by the Quartermaster's Department to ascertain the value of the power vehicle for highway as well as cross-country transportation of supplies of war. Much progress was made in this direction in the summer of 1912, when thirty-day tests were conducted in the Middle West by the Federal War Department, and also week tests by the "Blue" and "Red" Army in the New England Army Maneuvers, the conditions of the tests being practically the same as the old mule-power teams are required to fulfill.

TRUCK VERSUS HORSE

THE feed consumed by horses in this country is a matter that will receive considerable attention during the next few years. The writer is somewhat of a farmer, and he knows that it takes three acres of land to raise sufficient produce to feed one horse. We cannot, or do not, eat horses, and they do not give milk, and therefore there is a constant economic waste in feeding this large quantity of food to an animal that can produce nothing in return, and that cannot work as cheaply or more cheaply than mechanical devices.

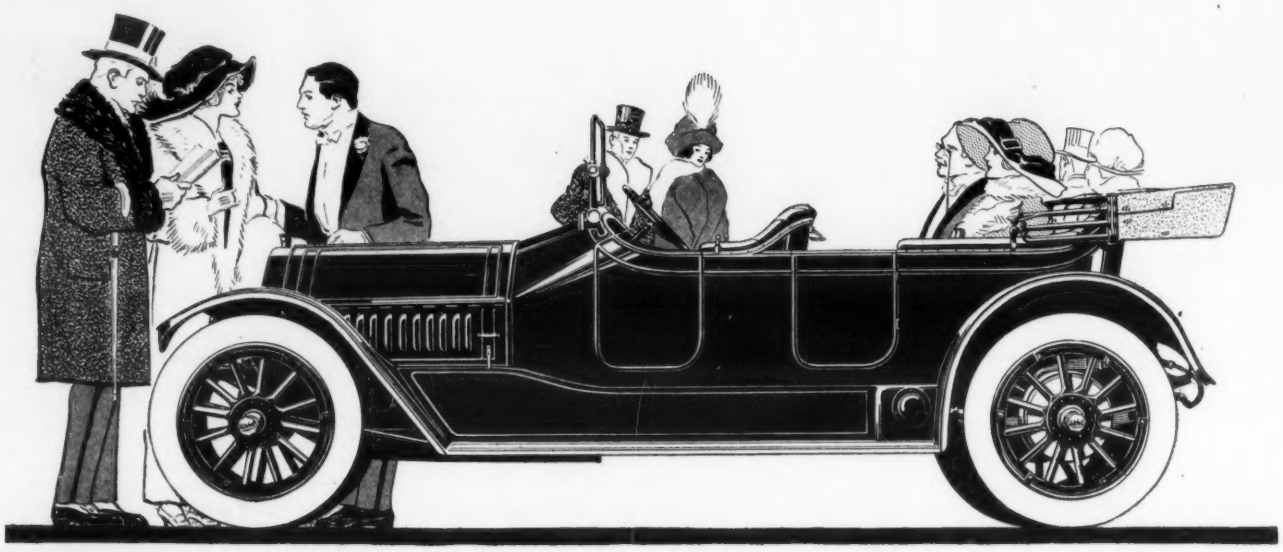
Such produce as cannot be made available for food consumption should be fed to cattle which give us our supply of milk and beef. It is estimated that there are 25,000,000 horses and mules in the United States, and if the proportion stated is carried to a conclusion it means that 250,000,000 persons could be fed by the acreage required to raise produce to feed the present supply of horses and mules.

It is a well-understood fact that a very large proportion of the transportation, hauling, and farm work can be accomplished by means of motor trucks at a great saving over the use of horses that do the same work. There is no doubt that the cost of feed will bring the average cost of operation down to a limit where the motor wagon will do the work as cheaply, if not more cheaply, than horses.

I predict that in twenty years 1,500,000 power-driven vehicles will be doing the transportation of this country, except in isolated cases. This is at the rate of 75,000 per year on an average. Surely the motor-truck industry has *some* future.

Mitchell

Take plenty of time for the Mitchell exhibit!



WHEN you see the Mitchell exhibit you'll understand at once that our whole idea in building the 1913 Mitchell line has been to give more *value* than you get in any other car. This has been accomplished without any sacrifice of the fixed high standard of material and workmanship maintained in our vehicle plants throughout the past 78 years. Whether it is the four-cylinder 40 at $1500; the six-cylinder 50 at $1850; or the big seven-passenger, six-cylinder 60 at $2500, you cannot get as much for your money in any other car.

The outward appearance—the proportions—of the 1913 Mitchell line—all five models—will give you the keenest pleasure. You will be delighted with the beautiful lines of the design; the simple elegance of the car in all its details; the effect of luxury given by the deep Turkish upholstery. Study carefully the refinement and perfection of workmanship, finish and equipment that have given the 1913 Mitchell the name of the American-built French car.

Something can be said here of the comfort of the Mitchell; the easy-riding that is assured by the long wheel base and French Belaise springs. But the biggest points of this unequalled car we'd like you to get for yourself at our exhibit; the things that make it pre-eminent in its class for power and silence, for strength, and safety, for convenience and dependability.

We would like you to find out for yourself how many automobiles of this price offer you the T-head motor, with 6 and 7 inch strokes, the *extra* long wheel base, complete electric lighting system and electric starter—each independent of the other. These are all in the Mitchell line.

Remember, all of this has been done without any relaxation of the most rigid standard of material and workmanship.

Also examine other cars carefully with the following unexcelled combination of Mitchell features in your mind: left drive and center control; Bosch ignition; Firestone demountable rims; rain-vision windshield; Jones speedometer; silk mohair top and cover; Turkish upholstered cushions; Timken front axle bearings; gauges on the dash to show air pressure and oil pressure; gauge in the gasoline tank which shows the amount of gasoline it contains; and a portable electric lamp which also illuminates the instruments on the dash.

All with T-head motor, electric self-starter, electric lighting system, and 36-inch wheels.

		Wheel Base	Stroke	Price F. O. B. Racine
7-passenger Six	60 H. P.	144-in.	4¼x7 in.	$2,500
2 or 5-passenger Six	50 H. P.	132-in.	3¾x6 in.	1,850
2 or 5-passenger Four	40 H. P.	120-in.	4¼x7 in.	1,500

For Canadian prices and name of nearest Canadian dealer, write to us.

DEALERS EVERYWHERE

Mitchell-Lewis Motor Company, Racine, Wis.

Branches: New York Philadelphia Atlanta Dallas Kansas City London · Paris

Looking Backward

The Influence of the Automobile Upon the "Funny Men" and Things Sociological and Mundane

By SIDNEY STRONG

Illustrated by R. M. Brinkerhoff

I LOOK back over the evolution of the motor car and find that the automobile has become such a familiar object that small boys no longer throw stones at it, and a man can stop to adjust his lights without being advised to get a horse. Perhaps the most significant illustration of the way things have gone is to be found in the change that has come over the comic papers. Only a few years ago the professional humorist's conception of an automobile was of an object that refused to move. In the comic press of to-day the automobile is an object that moves so fast that it always runs into a tree. The difference may be expressed in another way. A few years ago the comic automobile always stood still, and the driver, holding a monkey wrench, lay on his back under it. To-day the machine is represented with its wheels in the air, and the driver sits dazed in a ditch with one of his legs in the lunch basket, and a spare tire around his neck. The manufacturers find such pictures extremely gratifying, because they bear out all the claims that have been made concerning the speed which the up-to-date machine is capable of developing.

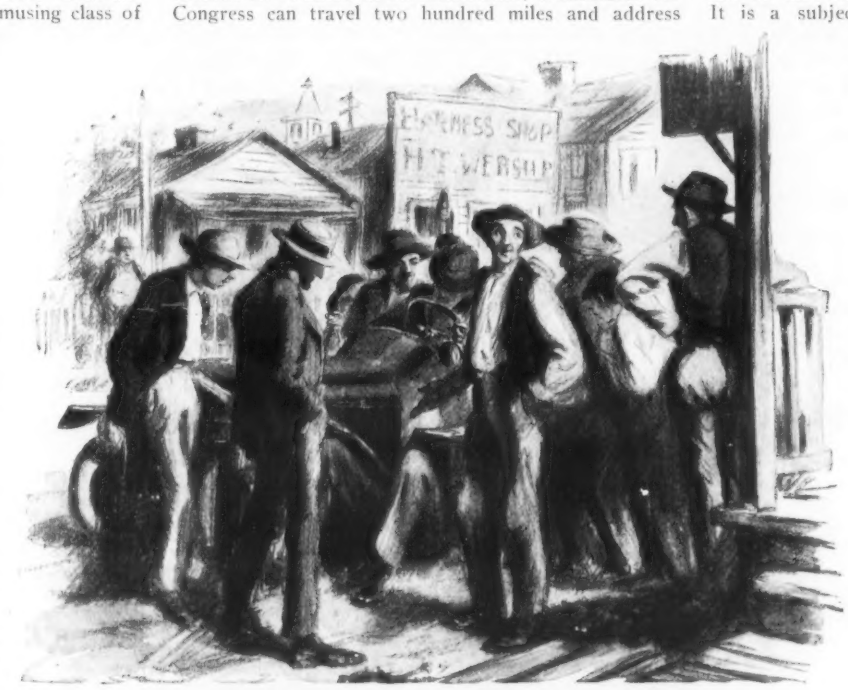
To-day the machine is represented with its wheels in the air and the driver with a spare tire around his neck

I was fond of the old pictures, and it will be some time before I grow used to the new ones. The old spirit of romance is vanishing. Formerly the young people used to elope in a touring car, and were pursued by papa in a taxicab that broke down at the critical moment. The comic artists nowadays use aeroplanes exclusively for their elopement episodes. Or take the mutual relations of the automobile and the dog. Once upon a time the dog was invariably scurrying from under the wheels of the machine in a state of extraordinary panic; but in the pictures to-day the dog is inside the machine, by the side of his mistress, and an object of envy to crowds of eligible young men wearing the latest fall fashions and a look of blighted affection. Sometimes I think it is envy, and sometimes I think it is fear; for it requires moral courage of the very highest kind to be a small man sitting between a C. D. Gibson girl and a J. Montgomery Flagg bulldog in a Maxfield Parrish car. I miss that panic-stricken, yelping dog, just as I miss those eloquent male legs protruding from under a stalled machine. Artists must have loved to draw those legs; it meant such a saving of time, and there was no need to bother over facial expression. I miss the pictures of that amusing class of pretenders who went about in dusters and automobile veils whenever they traveled in the subway. They carried my mind back to the times when the funny men used to depict gentlemen in knickerbockers and golf stockings who never played golf. That, in turn, used to remind me of the people who wore yachting caps when they went by steamboat to Coney Island. Art is long in letting go of an idea that has proved commercially practicable.

I CAN only point out at random such other changes as I have noticed from day to day. A systematic treatise is not in my line. A celebrated German scholar is already at work upon a monumental history of the automobile, dealing with its origins, its development, and its effects upon society, the family, the cost of living, the public highways, national manners, politics, the temper of pedestrians, and divorce. The learned author will let nothing get away from him. Starting from the diminutive, four-toed horse of Eocene times, familiarly referred to as Eohippus, he will trace the equine descent through the ages till it terminates in the newest model automobile. On his way this learned German will take up the war horse of the Assyrians, the horse in medieval art, the horse in German cookery, the race horse, the horse ridden by the Grand Marshal of the Amalgamated Garment Workers on Labor Day, the dark horse and the wrong horse in American politics, etc.

There will be a special chapter on the automobile in Kansas. The subject deserves it. The world to-day holds few more gripping spectacles than that of the Kansas farmer engaged in a life-and-death struggle with the gasoline trust. The farmer has taken to the automobile because it has been a profitable invention for him from the beginning. During the early, unperfected state of the automobile he made part of his living out of it by hiring out his teams for hauling purposes and collecting damages on his poultry. His income from these sources, supplemented by occasional automobile fines as sheriff or justice of the peace, put him in the position where he could emerge from the class of the downtrodden into the class of solid citizens, as soon as the motor car had been made practicable. Such prejudice against the automobile as still persists among farmers is found entirely among the younger men, and is due to the fact that a motor car, unlike a buggy, cannot be driven with one hand. In the course of time this problem will undoubtedly be solved, and the farmer will be completely happy, except when he finds his feelings torn between satisfaction at realizing the high hopes entertained of him by William Allen White and regret at contributing to Mr. Rockefeller's already large income.

A few years ago the automobile was a novelty in politics. To-day, political campaigns are inconceivable without it. Thanks to the automobile, a candidate for Congress can travel two hundred miles and address twenty public meetings on the subject of high prices and poverty. In the same time that it took him formerly to prove to ten thousand workingmen that he is a friend of honest labor, he can now prove that he is the stanch friend of fifty thousand workingmen. There are disadvantages, of course. A Tammany repeater can now vote five times as frequently as before the automobile was perfected; and a Harvard professor has estimated that owing to the use of the automobile and the telephone the average city boss is in a position to retire to a country estate at least ten years earlier than he formerly could hope to, even with the utmost persistence and industry. But, on the whole, the advantages outweigh the disadvantages. Take woman suffrage, for example. Many an old-fashioned citizen who would have been shocked to see a woman speaking from the tail of a cart finds it quite a different thing to have woman demand her rights from the back seat of a tonneau. Such a citizen would probably be led to think that if the horseless wagon has proved a convenience, the new woman might also prove a convenience. There is no use in scoffing at the association of ideas.



A few years ago the comic automobile always stood still and the driver, holding a monkey wrench, lay on his back under it

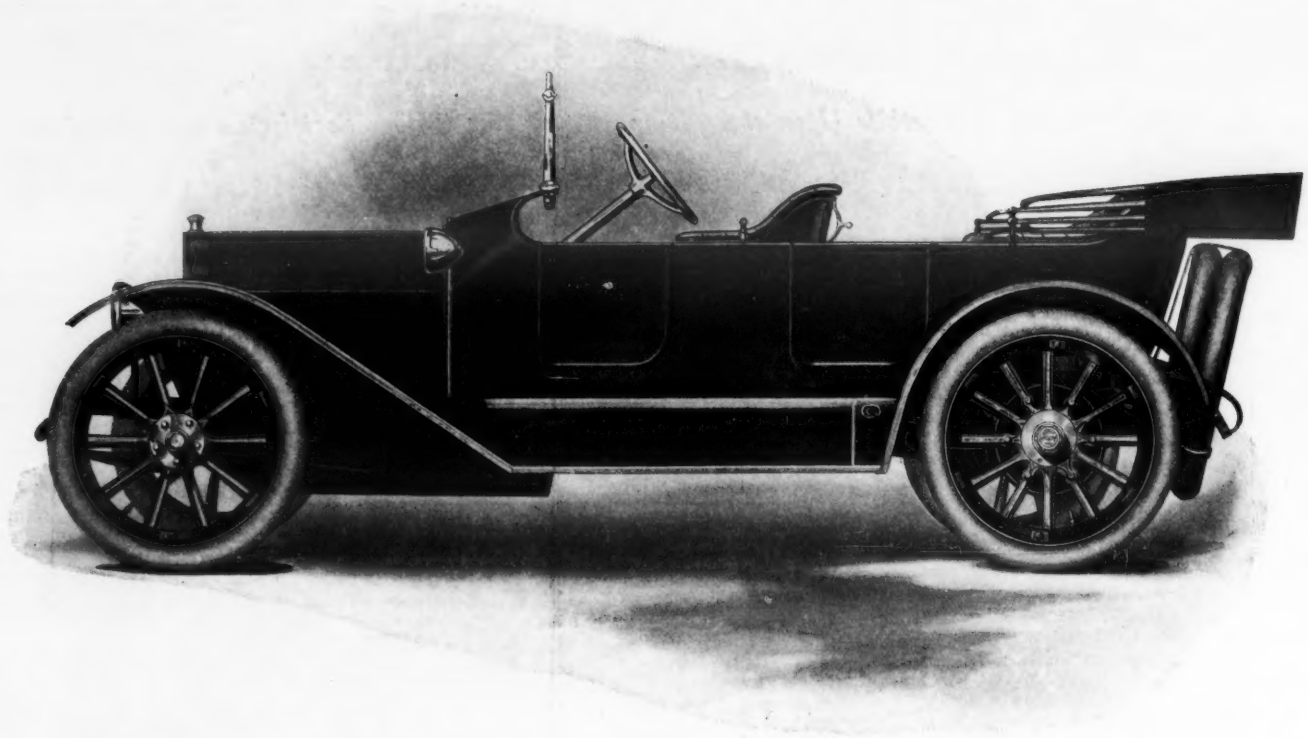
And that is the case with municipal government; where would we be without the automobile? Since the adoption of the motor car by the city departments, it is estimated that there has been an increase of three hundred per cent in the efficiency of the bookkeeping bureau in the comptroller's office, the bureau of marriage licenses, the weather bureau, and the management of the foundling asylums.

I can only touch upon the important part that is now played by the automobile in science, literature, and art. The automobile is now a recognized part of the unofficial curriculum in most of our universities, coming immediately after football and just ahead of the glee club.

The student of sociology who runs a car is in a position to supplement his classroom work by a personal study of Rathskeller and billiard-room conditions in our largest cities. The growing popularity of the automobile in medical circles is attested by the perceptible increase in doctors' fees. The stage villain who formerly wore a dress suit and cape overcoat and smoked a cigarette, nowadays wears a duster and leather cap; the heroine, needless to say, is as fair and spotless as ever. Playwrights were formerly compelled to put their male stars into a business suit in the first act and into evening dress for the rest of the play, thus creating a certain effect of monotony. The automobile coat has made possible the revival of the four-act play, since the coat can be removed in the second act, leaving the villain in boots and goggles.

I cannot leave this subject without a word of tribute to the rôle of the taxicab in modern society. It is a subject upon which few people can speak without emotion. The advantages of a college education can never be fully appreciated until a man has tried to figure out the legal fare from the theatre to his home on a rainy night. And that is one of the charms still left to foreign travel. Cathedrals and old masters are very much alike all over Europe, but the language on taximeter clocks is different in every country, and thus supplies an entrancing subject of study in which the greater part of the time allotted to Berlin or Brussels may be agreeably passed.

THERE was once a traveler who during a two weeks' stay in Paris had completely mastered the taxicab fares from his hotel to every point of interest in the city, such as the Moulin Rouge, the Bal Bullier, the Café d'Harcourt, the Quat'z-Arts, the Folies-Bergère, etc. He could always tell beforehand what the charge would be, to a centime; but that was on condition that he kept his eye on the clock. Once, on his way to the Bal Tabarin, he leaned out of the window to see President Fallières ride by, and, when he turned back, the clock had gained four and a half francs on him. Thereafter this disappointed traveler used to assert that while the shortest distance between two points has been defined by Euclid, the longest distance between two points may be easily ascertained by taking a motor cab. He also used to complain that the law in fixing the scale of prices for taximeters has failed to take into account the difference of weight in passengers. Thus the charge will always be less for a large, muscular passenger than for a small, timid one. If the small, timid person is accompanied by a lady and it is raining hard, the fare depends entirely upon the early religious training of the chauffeur.



1913 MOON 48 Torpedo

Completely Equipped, $1985

Powerful T-head motor—long wheelbase, 121 inches, allowing exceptionally roomy and luxurious bodies

Electrically cranked and lighted

No Experiment—The MOON Electric Cranking and Lighting System is an original product, developed after years of experiment by the combined engineering forces of the MOON Motor Car Company and the Wagner Electric Mfg. Company. The latter company is the largest maker of small motors in the world, and enjoys the reputation of producing some of the finest electrical apparatus in America.

92 Revolutions a minute is assured on the coldest mornings. This means that the MOON Electric Cranker has enormous reserve power. Merely pushing a button starts the motor. When the engine picks up, the system automatically reverses, charging the battery without further attention. There is ample power for all the lights—in the storage battery.

Spins freely at zero—During the tests and experiments these engineers frequently refrigerated the engine to zero, tightening it up so that it was practically impossible for any man in the laboratory to crank it by hand. *Even* under these conditions the engine was freely spun by the Electric Cranker.

Only 2 wires are required to connect the starting unit with the storage battery, and the system is so simple that it makes no difference how these wires are connected up. There are no instruments on the dash, and no switches. The entire controlling mechanism is in the starting unit, which weighs but 60 pounds—this is remarkable.

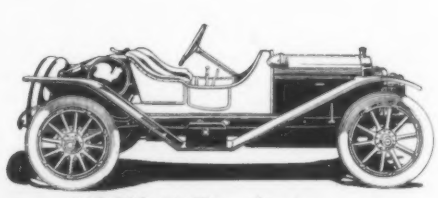
The same high engineering standards control every detail of Moon construction

1913 MOON 48 is furnished in all types of bodies, and is completely equipped in every detail

MOON Motor Car Company

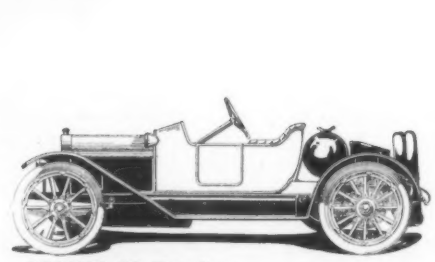
4414 North Main Street

Saint Louis, U. S. A.



MOON 48 Raceabout
completely equipped, $1985

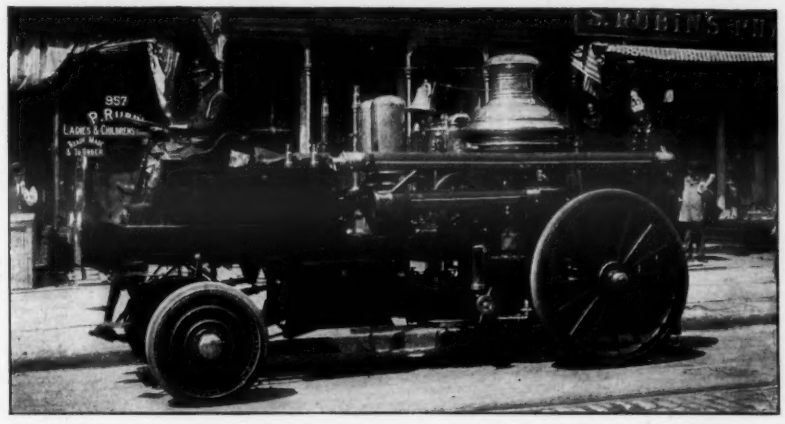
MOON 48 Brougham Coupe
completely equipped, $2250



MOON 48 Roadster
completely equipped, $1985

An electric ladder truck of the Springfield (Mass.) Fire Department

A fire-engine truck used in demonstrating service in Boston



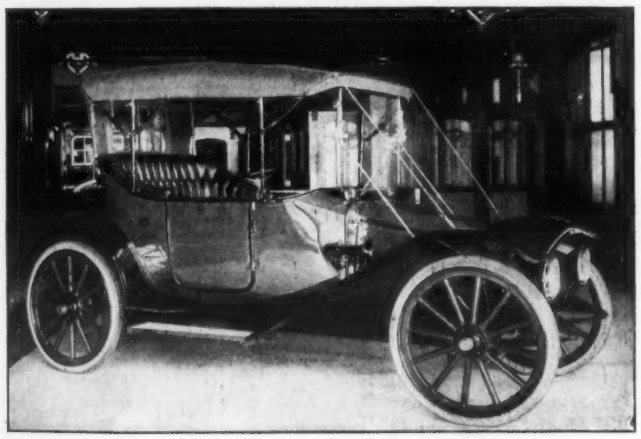
The Electric Vehicle in America

It Has Proved Its Great Usefulness and Its Future Is Limitless

By THOMAS C. MARTIN

THE man interested in the electric automobile, either as a commercial or a pleasure vehicle, looks to the coming years with optimism and confidence.

The extent to which the electric delivery wagon and truck have made good in the various branches of industry can be inferred from various lists published last spring, showing that a famous jewelry house in New York had twenty-one of them in operation, some of them having been in use ten years; that the two largest express companies had in operation nearly three hundred; that a St. Louis brewery had a fleet of over fifty trucks, a New York brewery forty-eight, and another seventy-two; that dry-goods stores were employing them by the score, and that the United States Government was acquiring them for use in the Philippines, for navy yards, and for the handling of mail. Two years ago there were only five electric trucks in Detroit, but last April one hundred and twenty-five were in service in that great center of automobile production, most of them with a two-ton rating. In Chicago within practically the same period the number of electric trucks has increased from eighty-one to four hundred. The Commonwealth Edison Company has refitted its largest garage so that it will take care of three hundred commercial and pleasure vehicles at one time. Last June over two hundred electric commercial vehicles were under order in Chicago and undelivered. There and elsewhere during 1911 one dealer in electric vehicles sold trucks to the total of $981,000. In New York City during the year ending June 30, 1912, the number of such vehicles increased 35 per cent. In St. Louis the central station revenue, from charging the batteries for such vehicles, has increased 37 per cent this year over 1911. When we come to the use of pleasure vehicles the prospect is simply unlimited. It seems but yesterday that the writer, with that versatile pioneer, Isaac L. Rice, jolted over the holes in the pavements of New York's streets in the only electric vehicle then in America, and with him wondered when there would be a thousand. The number to-day is up in the scores of thousands, with an annual output which apparently bids fair for some time to equal the gross number already in use.



An electric roadster able to go one hundred miles at twenty-five miles an hour without recharging

Take, for example, Denver, where there is already one electric pleasure vehicle to every 217 inhabitants. Possibly this represents a fair "saturation," although even better records might be shown. The local central-station system, the Denver Gas and Electric Light Company, has made rates to private garages on the off-peak basis of $5 minimum monthly charge plus 4 cents per kilowatt hour over and above the minimum, with a 10 per cent discount. "Peak charging" raises the minimum to $7.50 per month. For public garages the rates are about 3 cents, with discounts based upon quantity. Early in 1910 the company established a department of electric-vehicle and storage-battery engineering, which has since done much to standardize garage practice, educate users in the proper care of equipment, assemble and utilize cost data, and promote cooperation among dealers. The company sells no vehicles directly, and maintains impartiality between the competitive makes in its territory. An attractive monthly publication is mailed free to all owners of pleasure and commercial electric cars and to local merchants owning and operating gasoline or horse-drawn vehicles and trucks.

THE ELOQUENCE OF FIGURES

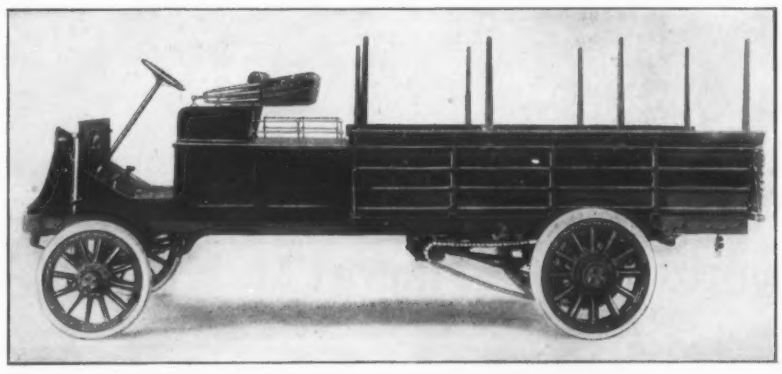
IN JUNE, 1910, there were three commercial and four hundred and eighty electric passenger or pleasure vehicles in the city, which now has fifty-seven commercial electric vehicles in service or on order and eight hundred and fifty passenger or pleasure vehicles of the electric type in service. The vehicle demand on the central station calls for 2,160,000 kilowatt hours, yielding a revenue of about $64,800 per year. Repeat orders are coming in, and the estimated increase in the next two years is 300 per cent.

In Memphis, Tenn., progressive work, fairly typical of that undertaken in hundreds of cities all over the Union, has been done. A year ago there was not a single garage in the city where an electric could be housed. A considerable number of antiquated machines were in use, constantly in need of repair, representing a source of annoyance and expense to their owners. Finding that the adverse conditions were causing a decrease in the number of electric cars in service, the Memphis Consolidated Gas and Electric Company opened a garage, in its own name and under its own management, exclusively for electric vehicles. The company established fixed charges for its service as follows:

Full service, per month	$25.00
Full service less delivery, per month	20.00
Vehicle care and oiling, per month	10.00
Battery care, per month	7.50
Trucks, 1,000 lb. to 3,000 lb.; full service	20.00
Charging energy on above contracts, per kw. hr.	0.05
Charging energy (no contract, $1 minimum), per kw. hr.	0.10
Dead storage, per month	7.50
Wet storage, per month	12.50
Single wash, day	1.00
Single wash, night	0.75
Battery and car labor, per hour	0.75
Single call or delivery	0.25

In eight months after opening this garage the company was forced to increase its floor area from 6,500 square feet to 11,500 square feet. It now has twenty-six charging plugs and a daily energy consumption load of over 600 kilowatt hours. It is charging eleven commercial vehicles and thirty-four pleasure cars. All but two of the commercial machines have been placed in service since the garage was opened. Such data are striking when the multiplier is 6,000 central station systems, available all over the country to do the same thing proportionately to population served. And this is being done in many places at a much more rapid rate than at Memphis.

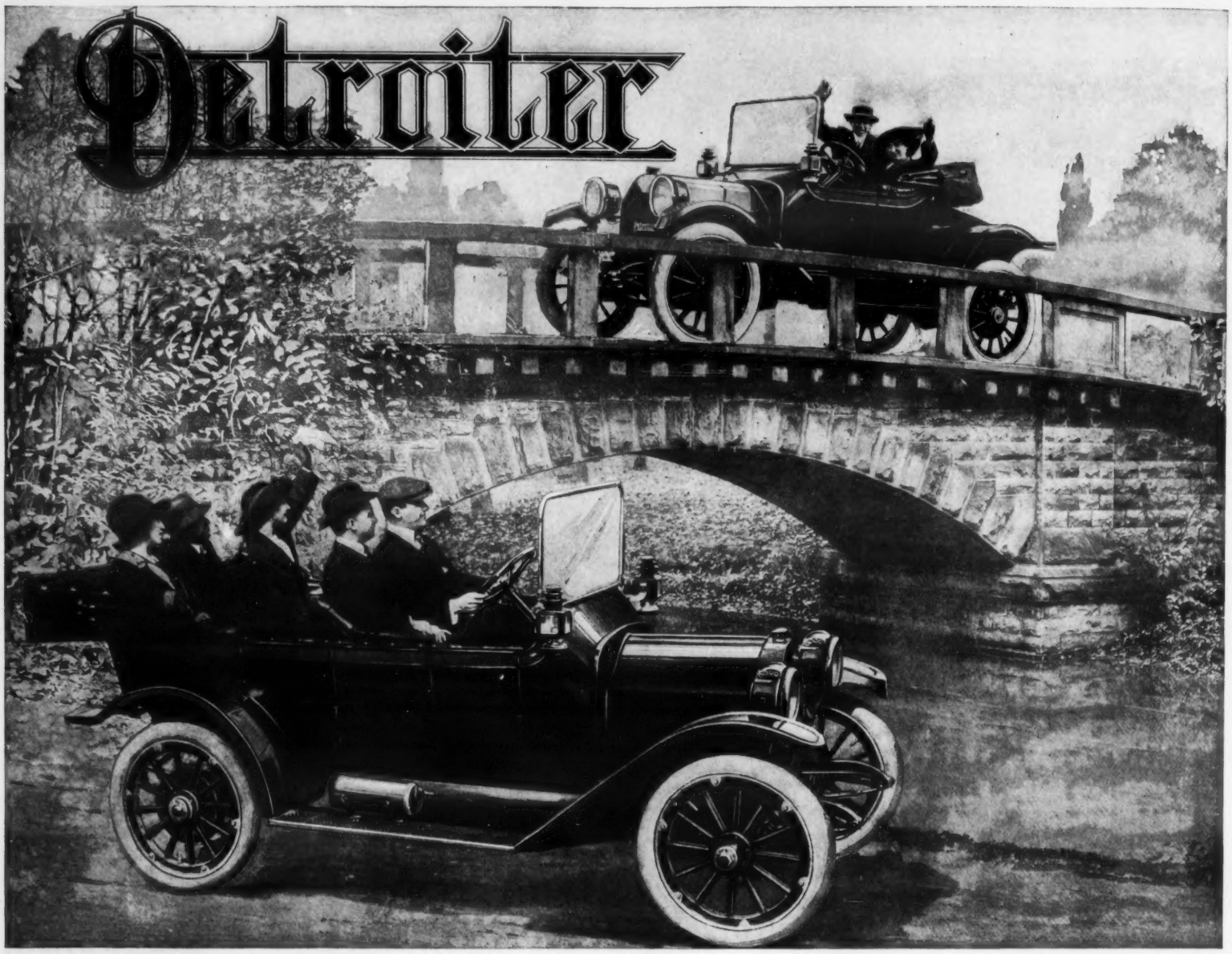
In Denver there is already one electric pleasure vehicle to every 217 inhabitants



The "short-haul" commercial business is where the electric is getting its strong grip, and for city work it seems impossible that there can be any superior

COST OF OPERATION

THE Commonwealth Edison Company of Chicago, with thirty electric vehicles then in commission, made a report for the three years ending December 31, 1911. The average cost shown by elaborate analysis was 25.2 cents per car mile. The company has abandoned the purchase of horses, and early in the current year had sixty-eight electric vehicles in operation. The central-station company is a natural pioneer in its own field of automobile work, for the machines can deliver incandescent lamps, carry meters, haul line-construction material, assist in inspection and maintenance operations, help to thaw out frozen pipes, repair circuit damage, give special demonstrations of street-lighting effects, or even keep a free fan running in sultry weather at the home of some sick person. An example of such emergency work is shown in the display made last spring by the Dayton (O.) Power and Light Company at Trotwood, a little town south of the place that automatic cashiers come from. Desiring to secure a street-lighting contract, the company sent over its 700-pound electric truck, and this fed the 75-watt series tungsten lamp hung up at a street corner just as well as if it had a whole power plant back of it. The company got a 25-year franchise, a 10-year lighting contract, and a water-pumping order thrown in for full measure. It need not be wondered at that so many



$850 Your Car at Your Price $900

Your car—serviceable above all; roomy, graceful, distinctive. Eager to work hard and able to stand it; mechanically right—with *long stroke motor, multiple disc clutch, full floating rear axle, platform rear springs, left-hand drive* and *center control.* The Detroiter motor, 25 h. p., ball-bearing throughout, is a special design of extraordinary power on any speed. The rear spring suspension is full platform, shock absorbing. Brakes are of tremendous grip. The rear axle, full floating, is doubly ample in sustaining power and houses a broad geared pinion that cannot fail.

Your Price The first cost is right; and the low after-cost is one of the biggest points in the Detroiter's favor. One gallon of fuel=20 to 25 miles; one quart of lubricant=75 miles; tire wear is minimized because axles *stay true* and tires are more than ample for the weight.

$850 **Standard Model A** costs $850. It is completely equipped, having top with Presto curtains and dust cover; wind shield; gas and oil lamps; generator; tire and repair tool kit and jack; horn.

$900 For $900, the Detroiter offers you in *addition* the following:

Standard Model A-1—

Prest-o-Lite tank; gas and oil lamps; quick detachable demountable rims; Stewart Speedometer, Model 26; tire irons; robe rail.

Standard Model A-2—

Electric light equipment (Exide battery, combination side and tail lamp; two large electric headlights); quick detachable, demountable rims; Stewart Speedometer, Model 26; tire irons; robe rail.

Roadster **The Detroiter Roadster** is in two models, equipped as models A-1 and A-2. The price is $900. Its most remarkable feature is the enclosed, rain-proof, dust-proof rear deck with two compartments, ample to hold a pair of inflated tires and the biggest suitcase made. No tag ends anywhere. One of the handsomest cars made regardless of price.

New catalog of all Detroiter models is just off the press. Write to us or to our nearest distributor for your copy.

Briggs-Detroiter Company 471 Holbrook Ave., **Detroit, Mich.**

Principal Distributors for the United States

BALTIMORE, MD.
Detroiter-Baltimore Company
BOSTON, MASS.
Andrews-Dykeman Company
CHICAGO, ILLS.
Illinois Automobile Company
DETROIT, MICH.
Barber Motor Sales Company
FORT WORTH, TEX.
J. R. Overstreet
INDIANAPOLIS, IND.
E. M. Holmes
JACKSONVILLE, FLA.
Dixie-Detroiter Company
KANSAS CITY, MO.
Southwest Motor Company
LOS ANGELES, CAL.
Y. R. Del Valle
LOUISVILLE, KY.
Inter-State Motor Car Co.
MILWAUKEE, WISC.
Oakland-Wisconsin Motor Company
MINNEAPOLIS, MINN.
Brice Auto Company
NEW YORK CITY
E. C. Pardee
OMAHA, NEBR.
T. G. Northwall Company
PHILADELPHIA, PA.
Detroiter-Philadelphia Company
PORTLAND, MAINE
Spear Auto Company
PORTLAND, ORE.
H. L. Keats Auto Company
ROCHESTER, N. Y.
F. R. Luescher, Inc.
ST. LOUIS, MO.
Brown Automobile Company
SAN FRANCISCO, CAL.
Carl Christensen
SHREVEPORT, LA.
Wray-Dickinson Sales & Garage Co.
WEBSTER, S. D.
South Dakota Motor Car Company

of the larger central station companies have large "fleets" of electrics in service.

Some special fields quite recently, beyond the realm of contemplation, also are being cultivated by the electric vehicle. One of these is that of the rural and agricultural districts. Of the 30,000,000 horses and mules in the United States, about 90 per cent are employed on farms, which thus get the most inefficient form of motive power the world knows, except it be that of men, for manual farm labor costs eleven cents per hour and animal only eight. But eight is bad enough, for mechanical energy costs much less, and electrical energy, especially from water power, can be had at from five cents downward to one cent per horsepower hour. To-day hundreds and thousands of farms in this country are therefore adopting electric power, and this in turn is directing attention to the electric automobile for haulage to market and many other purposes. The Boston Edison Company, with a service area of over 600 square miles, embracing much rural and agricultural territory, now has an electrical circus traversing these regions full of devices that can be operated from its circuits—milkers, churns, silo and feed cutters, hay hoists, pumps, woodcutters, while electric trucks illustrate what can be done under all the normal conditions of farm life.

THE ELECTRIC IN CITY LIFE

THERE are many special departments of work in urban life into which the electric vehicle is rapidly fitting itself just as the gasoline has done, such as hauling garbage, street sprinkling, inspection, police service, and fire duty. It is perhaps not appreciated how far the electric vehicle has already gone in these respects, both here and in Europe. As an example may be cited the experience of the Fire Department at Springfield, Mass., which has a variety of electrical equipment. Its ladder truck carries a total length of 325 feet in ladders and a crew of seven men, and has four three-horsepower motors and 80 cells of 17-plate battery, the truck weighing complete ten tons and making fifteen miles at full speed on a single charge. The truck has a guaranteed maximum speed of twenty miles per hour on a level roadway. The combination wagon carries a 40-gallon chemical tank, 200 feet of chemical hose, and 1,000 feet of regular fire hose. It is driven by four three-horsepower motors and weighs seven tons, having a speed guarantee of thirty miles an hour. Its battery equipment is the same as that of the ladder truck. On a 12 per cent grade, it has made a measured speed of twelve miles an hour. On a test run the ladder truck ascended a 12 per cent grade at a speed of eight miles per hour. Three new electrically driven hose wagons were ordered last year by the city authorities, in spite of the vigorous competition of local gasoline machine manufacturers having a strong foothold in the city. The cost of energy for the first month's service was only $3.78, and for the second month $7.77, the rate being about three cents per kilowatt hour. The initial cost of the motor-driven ladder truck was about $12,000. A first-class horse outfit costs about $5,500, but the annual cost of operation by horses is far greater than by electricity. Three horses cannot be maintained in a condition necessary for fire-department service on less than $1,000 per year. The cost of shoeing horses with the best rubber pads is at least $4 per month. The cost of electrical energy is noteworthy, and even if a life of only a single year should be obtained from the battery, there would still be a margin of nearly 100 per cent in favor of electricity. The electric-vehicle equipment can be handled more rapidly and safely on the streets than horses, quicker acceleration is possible, a higher average of speed can be maintained, and there are many incidental advantages.

It is needless to say that there is a constant evolution of new types of electric vehicles, both commercial and pleasure, approximating steadily toward a never-attained ideal of perfection, for in electricity the standards cannot "stay put." Last September, in the street parade of old cars given by the Chicago Automobile Trade Association, one electrical manufacturer had fourteen machines in line, showing his evolution since 1896, when the pioneer in a similar parade made 12 miles. Now an electric car can make over 100 miles on one charge. The writer has a machine which over two years ago made over 107 miles around New York on one charging, with many miles still to go if called on. A man in Oklahoma has a machine for which he claims nearly double that record. But the long haul is possible, and if so, why should not some one—everyone—make it? The "short-haul" commercial business is where the electric is getting its strong grip, and for city work it seems impossible that there can be any equal or superior, whatever may be the basis of comparison. There, too, in the city is the supreme appeal of the pleasure electric vehicle for women, for doctors, for an infinite range of social service. And the variety of vehicles offered is also infinite—tiller steer, wheel steer, chain drive, gear drive, open body, closed body—and now machines in their life, as well as in their performance, emulate the best of the gasoline rivals.

EVIDENCES OF FAITH

THE electrical men have the faith which moves mountains, and every day the evidences accumulate of their intention to conquer in this illimitable domain. A sign of the times is the campaign waged during the past year by the Electric Vehicle Association of America to secure public attention. Many of the electric-vehicle manufacturers have advertised liberally; and some of the central stations, such as that in Boston, have not hesitated to spend as much as $100,000 a year in education of the public through the advertising columns of the daily press. But the association has gone beyond this, and Mr. Frank W. Smith, chairman of one of its committees, reports spending subscriptions from the members of over $40,000, in general but carefully directed publicity aimed at "prospects" of one kind and another, in the common cause for the common good. Of this amount from 101 contributors, 58 per cent came from central stations, 11 per cent from vehicle manufacturers, 31 per cent from makers of accessories. So effective has been the campaign that it is now proposed to spend at least $50,000 in a further effort this year. Could anything express more strongly the belief in the electric vehicle and its future?

The One

By EDWIN BALMER

Illustrated by George Wright

DUST-dimmed and fume-spuming, car No. 8 gatling gunned by on its sixteenth lap. Two more than half of the twenty-eight long, nine-mile triangles for the continental road race trophy were finished for three cars. Five others of the fourteen which started still were running; but engine trouble, tires, bad driving, lack of nerve, and a few accidents had put them back. Three only were running on the sixteenth round, of which ricocheting, tiger-striped No. 8 now was running third. But big "Happy" Hinman, as the world already had been told by the telegraph senders sputtering before us in the grand stand, was driving the race of his life; he was closing up on the leaders—and the probability that each time he passed us would be the last was greater with every lap.

"Come on! Come on! Go on! Go-o-on!"

"He's safe! He's coming again! He's all right! I can still see him—sa-afe!"

The alert, brown-haired girl, flushed and with blue eyes burning in triumph, was on her feet in her place in the row ahead of me and three seats to the right. The dark-haired, quiet girl, with pale cheeks glowing only in a bright, rose-colored patch, stood in her place in the row behind me and three seats to the left, watching with her big, dark eyes the turn in the road round which No. 8 had disappeared.

OTHER cars leaped out from the woods down in the other direction, caromed up from the road in their bursts of dust and burnt-oil haze. But those girls glanced toward them only if they seemed to be gaining; each time the man with the megaphone raised his great horn to his lips to announce the time of a lap, the cause of a car stopping or a disaster, both looked again to the point at which No. 8 had vanished, or, if it was nearly time for the car to be around again, they stared to the opening in the trees on the other side where the car would first appear.

And so complete was each one's absorption in No. 8 that neither yet had noticed the attention of the other. Hinman, when he had made them known to me, had said they had not met. He wished each to watch the race for herself. I, in between, was to watch them.

"I grew up with her," he said as he pointed one out to me. "Sometimes I think I can never care about anyone else. But then I met her," he said, indicating the other, "and other times I believe she's the only one I can make really to care. So you tell me what to do. I'm going to *drive* this race—not so much to win either of 'em, you understand, as to know for certain which one I should win."

At the edge of the trees from which the cars appeared on their way to the stretch before the grand stand, the soldier on watch waved his big red flag, the bugles blew "Car Coming," and a great green car scurried out from the trees and behind it, so close that they seemed to come together, another.

The green car bore a figure upon its radiator, more gigantic each second.

"It's Donnet in No. 6!" The crowd shrieked its delight at the driver and the car which had been running second. "And Hinman in No. 8 trying to pass!"

"Take the side of the road! You can make it! Don't let him hold you back! Oh, come o-on!" The girl on my right was upon her feet, all passion, all daring with him in No. 8. The driver of No. 6 was not turning out to permit the overtaking car to pass. He was trying for a few seconds more to deny the necessity.

"Don't try to pass him now!" I made out the supplication from the other side. "Wait just a second! The road's wider there!" They were almost to the wider, oiled, and smoothed racing way reaching before the stands.

But Hinman did not wait. With a squirt and scatter of pebbles, a yellow explosion of dust from under his wheels, he swung far to the side of the road. He toppled far over and slipped; but then his wheels bit. No. 6, in the middle of the road, tried by a more desperate spurt to avoid the pass; but No. 8 went by, swung in ahead of the green car, and cannonaded into the stretch in second place!

"Go on now! Go o-on!" the girl on my right sped him the ecstasy of her share in his triumph.

"He made it!" The other on my left gazed after him in thankfulness, the look in her eyes of a soul saved from torment.

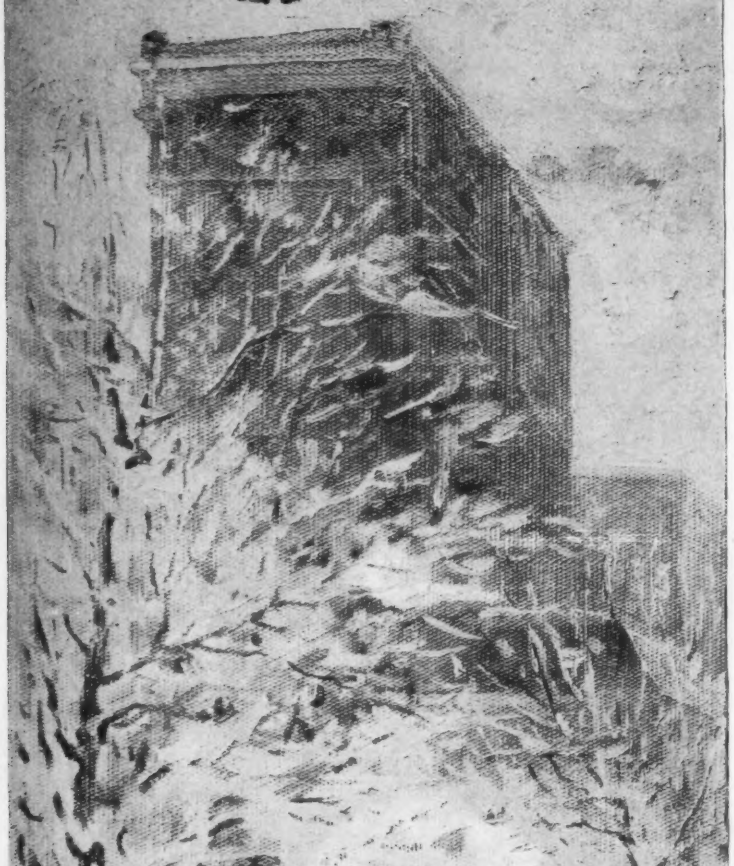
"Eighteenth lap for car No. 8!" the announcer bawled at us through his megaphone. "Seven minutes, twenty-five and six-tenth seconds. The fastest lap yet timed! Car No. 8 is now running second, having a minute less elapsed time than No. 6, which it just passed." The cars had been started in order, a half minute between each. "Car No. 7 is still leading the race, being on this lap forty-seven seconds ahead of No. 8 and having started only thirty seconds ahead."

BUT at the nineteenth lap No. 7's lead was cut down to forty seconds, only ten actual running time ahead. At the twentieth round the difference was but thirty-five seconds—five seconds difference in time elapsed—as they boomed by the stand not half a mile apart, in plain sight of each other, with No. 7's mechanician looking back as he uselessly pumped oil, and No. 7's driver—Wolton—skewing like a lunatic into the turn with his neck for sale, and Hinman, a madman amuck at the driving wheel of No. 8, after him.

Once again, at that pace, Wolton somehow got around again, smashing all records, for the race, for the course—for any similar course in the world. But the new record he set was smashed in turn before it could be announced, when Hinman projectiled by just thirty-two and one-tenth seconds behind. So Wolton lowered that mark by one second and a half on the next lap, yet once more Hinman gained. No. 8 salvoed into the stretch and crossed the line just thirty seconds behind No. 7, running even in elapsed time. But then, when the red flag waved at the edge of the wood on the other side

MARMON

"The Easiest Riding Car In The World"



THE more you know about the automobile — the more reasons you find for choosing a Marmon. It was the first American car to use side door and cast aluminum body construction, three point suspension, straight line shaft drive, positive force feed oiling through hollow crank shaft, pressed steel rear axle construction, double brakes on rear wheels, and many other features, now used in other high class cars. In the perfection of the best features of automobile construction as well as in their origin the Marmon stands foremost.

Complete information concerning the Marmon "32" and the Marmon Six, on request.

NORDYKE & MARMON COMPANY

Indianapolis *Established 1851* Indiana

SIXTY YEARS OF SUCCESSFUL MANUFACTURING

again, and the bugles blew "Car Coming!" and No. 7 shot into sight, and everyone was standing and leaning to see how much more No. 8 had closed up, no second car came! The quarter mile, the half, the mile from the wood, No. 7 made alone, No. 8 not yet in sight. Wolton crossed the timing line in the same time as the last lap and went on to the turn, his mechanician looking back and shouting to him.

Everyone remained standing, silent or whispering in the suspense. Still no car appeared in the opening under the trees; the soldier with the red flag stood motionless; the bugles were quiet; only the telegraph instruments upon the pine table before the announcer, which brought word of disaster in other parts of the course, began clicking.

THE telegraph operator was writing, the man with the megaphone watching him. Slowly he lifted his horn; but before he could speak the brown-haired girl broke the suspense, confidently.

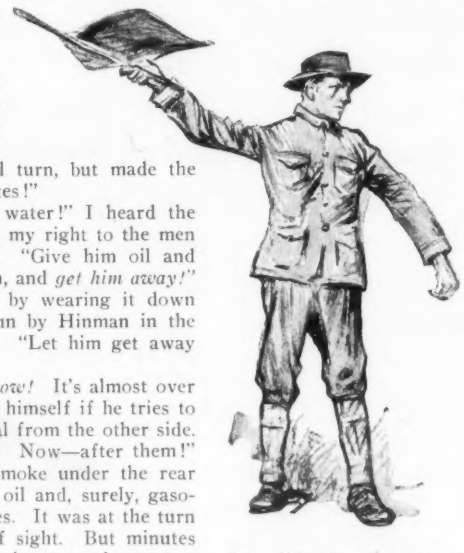
"There's something happened to block him. Or he's had engine trouble! That's all!"

The possibility that Hinman might have failed or that accident could have hurt him did not master her. I looked toward the dark-haired girl with the big, wide eyes.

"If he's only not killed!" I saw her white lips form the whispers rather than heard them. "If he's only not killed—that's all I ask!"

"Car No. 8," the megaphone man began, "threw a tire on the first turn on the other side of the course, and, keeping on without slowing, Hinman—"

The roar from the stand drowned his voice. At the end of the trees the red flag waved violently, as it would wave for only one car; the bugles blew; and out from under the shadow of the trees a wild, tiger-striped car, bearing its great 8 upon the radiator, plunged toward the pits before our stand, running on three bare rims, with a tire only on one forward wheel, Hinman holding the car grimly to the road, his mechanician with both hands above his head signaling their repair men.



"No. 8 is stopping at the pits for tires!" the announcer tried to make himself heard above the applause. "It threw a rear tire at the first turn, and the other rear and one front at the second turn, but made the round in eight and one-half minutes!"

"Oil! Give him oil, gas, and water!" I heard the frantic reminder from the girl on my right to the men screwing on three tires at once. "Give him oil and gas so he won't have to stop again, and *get him away!*" Car No. 6, which he had passed by wearing it down second by second in each lap, spun by Hinman in the pits and dashed triumphantly on. "Let him get away and—*after them!*"

"Oh, don't let him start again *now!* It's almost over and he's too far behind. He'll kill himself if he tries to catch them now!" It was the appeal from the other side.

"A-ah-h! They've got him off! Now—after them!"

The churning cloud of white smoke under the rear wheels told that No. 8 had taken oil and, surely, gasoline and water, as well as new tires. It was at the turn and now out of sight. But minutes had been lost—minutes on the twenty-third lap of the race, with but five more—forty-five miles—in which to regain them. Yet Hinman was driving to do it.

No. 8 went by, swinging in ahead of the green car and cannonaded into the stretch in second place

Setting a new record upon that round to smash by seconds in the next, he got back half a minute in two laps from No. 6; upon the next circuit—the twenty-sixth—he again passed No. 6 and was running second. He had gained upon No. 7 also, but Wolton was still minutes ahead. He had run without a stop, and there were but two laps left as No. 8 burst from the trees and crossed the timing mark for his fastest lap.

"Drive carefully! Oh, you can save yourself, and you're second now! You can't catch the other! You'll only kill yourself!" I heard the protest from my left first this time; but then I got the other's admonition.

"Go on now! Go on and you can beat him! He hasn't stopped yet, so he'll have to! For oil anyway. Now's when he'll have to stop! Go on, and you can beat him!"

Hinman was around the turn away from us. A couple of the other cars, still running but no longer in the race, passed us; but no one looked at them. The girl on my right, who had just cried No. 8 on, was standing upon her chair; so also, to get first possible sight of Hinman, the pale girl with deep eyes and with little white fist convulsively clenched, was on her chair and staring.

No. 7, of course, came first into sight; but, as it cleared the trees, the mechanician had both arms in the air, signaling the pits.

"Oil! Oil and gas! He's got to stop! And there's one lap left!" I observed the wild triumph upon my right, and, looking at the other girl's face, I saw she knew what this meant for the last lap.

For Wolton stopped at the pits. Needing only oil and gasoline, he did not stop long, not so long as Hinman had to. Yet No. 8 was closing up so fast that

"Don't try to pass!" I heard the anguish of the girl to my left. "Pass him! Oh, get by him! Beat him in!" I got it from the other side

Hinman was in sight as No. 7 was getting away; and we knew, as Hinman came down the stretch as the flag fell for the last lap, that he had seen No. 7 ahead and knew it was possible to win.

"Cars Nos. 7 and 8 are now on their twenty-eighth and last lap!" the announcer confirmed as we waited. "Car No. 7, having been started a half minute ahead of No. 8, must finish thirty seconds ahead to win. It left the pits fifty-two seconds before No. 8 passed!"

SO WE waited. Other cars came out from the trees, but no one cared for them. The soldier with the flag had ceased to wave for them; the bugles waited. We watched, all standing on chairs now, to see the first of the two cars come out from the trees, and to see how close the other could be. There was a silence, so complete that, after the other cars had gone by, we could hear beyond the trees the far-off, faint clatter of motor exhausts.

"Two cars—two cars together! I can hear them both!"

The soldier with the flag was waving it across and across; the bugles pealed and were lost in the cry from the crowds down the course.

The cars were coming, and they were coming together!

The radiator bearing the 7 showed first, but so close behind it, that it was pressing the other to give room to pass as they shot into sight, came No. 8!

At once, I saw, the situation flashed to both girls. Hinman already had won the race. Unless he drove that last mile so madly that he wrecked his car before he brought it across the finish, there was no way for him to lose. He was directly behind the car upon which he had a half-minute's advantage. Still he drove on to pass it, steering out to the side of the road where it was narrow and steep before the stretch.

"Don't try to pass!" I heard the anguish of the girl to my left. "You don't *need* to! Oh, you've won—anyway!"

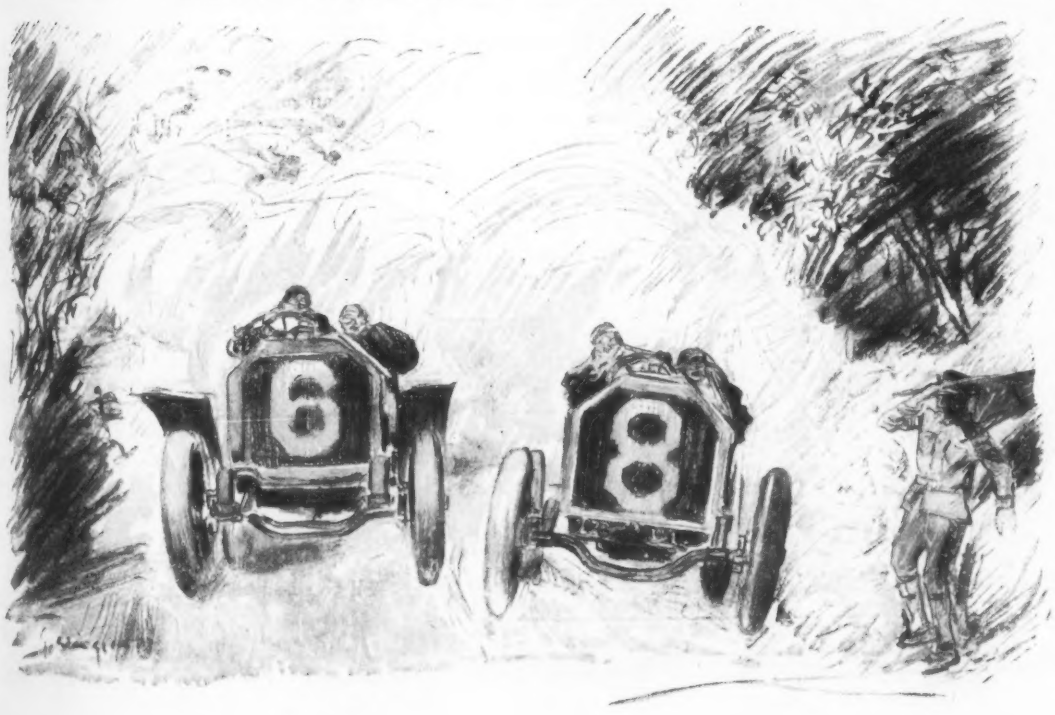
"Pass him! Oh, *get* by him! *Beat* him in! Oh, come on!" I got it from the other side. And Hinman came. Again, at the same narrow place where he had passed No. 6, he turned out, his wheels squirting up gravel and slipping from the side of the road. He seemed to be turning over, but somehow—the pace itself saving him perhaps—his wheels bit before they slipped to the ditch. He was by No. 7, and coming on! He came into the stretch leading by a length—finished, flying, a full second ahead.

AND never had I seen such ecstasy as glowed in the face of the brown-haired girl as she saw him cross the finish line, not only winning but leading! The only expression to match it was upon the face of the girl on my other side as she watched him pull up safe a half mile down the course and step, unhurt, from his seat. Then she fainted.

The people half mobbed Hinman, and tried to make him appear for all sorts of applause and to receive every manner of trophy. But all the time he was trying to get to me.

"Well," he demanded as I faced him, and he swept every other consideration aside as petty, "which one cares most about me? Who is it for me?"

"Why," I said, "it's perfectly plain. She," I pointed. "Don't you see her?"



No-Rim-Cut Tires—10% Oversize

Sales, 1912—918,678 Tires *Increase—125 per cent.*

Sales, 1911—409,521 Tires

1910—210,762

1909

1908

In all the records of tiredom nothing compares with this

That Tells Which Tire

What tire maker's claims can compete with this verdict—this final conclusion of the hundreds of thousands who have actually made comparisons?

Up to November 1st, these men had tried out 1,700,000 Goodyear tires.

And some 250,000 motorists, as a result, have adopted these tires on their cars.

Year after year sales have doubled. Last year's increase was 125 per cent. It would have exceeded 200 per cent had our output filled our orders.

Mark that overwhelming vote of the men who know. It denotes a new criterion on tires.

Men want to end rim-cutting, to save overloading. They are seeking, as you do, the minimum cost per mile.

And a mammoth plurality, to get these things, have settled on No-Rim-Cut tires.

Note the decisive decision. With some 30 tire makers contending for favor, close to one-third of all tire users now insist on Goodyears.

Count Them Anywhere

Note Goodyear tires at the Shows this year. Note what a percentage of the better cars are equipped with them.

You'll find no other tire, we think, on half so many cars.

Count them on the street—count them in salesrooms. Wherever you look, you'll find an amazing percentage favoring Goodyear tires.

Then think how the number is growing. There are now 10 times as many users as 3 years ago.

Where Will It End?

This trend, you see, is just getting momentum. Our sales last year by far exceeded our previous 12 years put together.

And the percentage of increase—125 per cent—broke every previous record.

That shows that tire users are selling these tires. The more we have, the faster we get new ones.

Men are measuring mileage, figuring tire upkeep, and they are telling the facts to friends.

At this ratio of increase, think what place these tires will hold in 12 months from today.

From Bottom Place

In 1905—after five years of tire making—we stood in the bottom place. We made then scarcely more than one per cent of the tires.

One of our rivals made 30 times as many. Two others together made 40 times our output.

But the next year—in 1906—our cost of replacement was 1.41 per cent. That broke all records on quality. On other tires the cost of replacement ran as high as 18.43 per cent. These are actual figures, based on royalty records.

Then men began to realize the Goodyear economy. Sales doubled every year. And for more than two years these tires have held the topmost place in Tiredom.

Car Builders Adopt Them

Last year, 122,000 new cars went out from their factories with Goodyear equipment.

This year's contracts with makers, at the minimum, insure Goodyear tires on nearly half of all the year's production.

Car builders, as you know, are the most experienced, most exacting buyers. They know which tires hold up best. They know which tires men want.

They are vitally interested—more than ever before—in cutting cost of upkeep for the automobile user. For this, above all else, affects the future sale of cars.

These men have compared tires on thousands of cars. The result is, they will use about as many Goodyears this year as all other tires put together.

8,000 Tires Daily

We are building now to bring our output up to 8,000 tires a day. This will enable us to completely equip 600,000 cars per year.

We shall be doing that, before many months, if the records of the past continue. And that will mean that an amazing percentage of the cars then running will have Goodyear tires.

Let Yours Be One

In the light of these figures, we ask you for a test. Make it for your own satisfaction.

These legions of experienced car makers and users are not making mistakes about tires. They are not coming in this way to No-Rim-Cut tires without a reason for it.

They seek what you seek. They are getting what you want. Together they are saving on tire cost, we figure, a million dollars monthly.

Go see the tires. One glance will tell you how the saving very largely occurs.

GOODYEAR

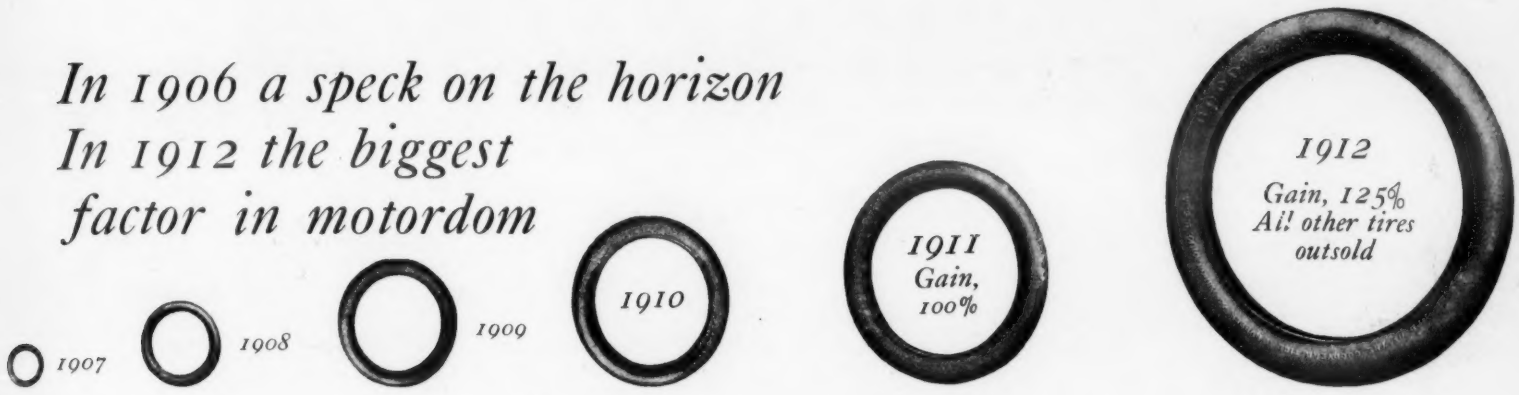
AKRON, OHIO

No-Rim-Cut Tires

With or Without Non-Skid Treads

No-Rim-Cut Tires—10% Oversize

In 1906 a speck on the horizon
In 1912 the biggest factor in motordom



Done by Mileage Tests

For years and years we have built tires solely by the mileage test.

And motorists are coming more and more to the making of mileage comparisons.

They are keeping records. They know the service rendered. They know how tire bills differ with the various types of tires.

These records only—kept on countless tires—have brought to us this avalanche of trade.

Note that this trend toward Goodyears began with the vogue of odometers.

It came with the invention of No-Rim-Cut tires, made 10 per cent oversize.

It grew and grew as men told others how these features cut down tire upkeep.

Make no mistake. Motorists cannot be hoodwinked. Nothing in the world accounts for Goodyear popularity save the lessened cost per mile.

The Telltale

For many years we have used the odometer to tell us how to better tires.

We built in our factory a tire-testing machine, which wears out tires—four tires at a time—under every road condition.

Every new method or fabric or formula has had to win out in this mileage comparison.

The odometer told our shortcomings. It marked our improvements. It made constant comparisons, right in our factory, with the mileage of rival tires.

And it told the same story to tens of thousands of men who were driving cars.

We knew what the story would be. And we knew that the story, told over and over, would do what it since has done.

Stop and Consider

In buying a new car, or buying tires for an old car, stop and consider this.

Tire upkeep is the main expense on cars. And half that upkeep, at the least, depends on your choice of tires.

Old Types and New

Old-type tires—clincher tires—rim-cut when wholly or partly deflated. Every motorist knows that.

Rim-cutting often wrecks a tire in a moment, after a puncture occurs. And the ruin can't be repaired.

Statistics show that this damage occurs on 23 per cent of all old-type tires.

No-Rim-Cut tires—our patent type—wipe out this loss entirely. These tires will never rim-cut.

So we save you in this way an average waste of 23 per cent.

Another 25 Per Cent

No-Rim-Cut tires, in air capacity, are 10 per cent over the rated size. Under average conditions, that oversize adds 25 per cent to the tire mileage.

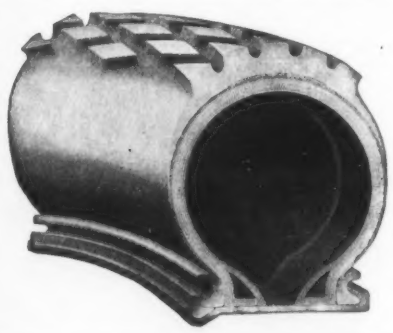
It means an over-tired car. It takes care of your extras. It saves the blow-outs due to overloading.

These two visible features mean an average saving of 48 per cent.

Let it go at that. You'll learn the rest when you come to make mileage comparisons. No-Rim-Cut and oversize are features that you can see.

Go see them at the Shows, at any Goodyear branch, or with any Goodyear dealer. Without our sales figures, one glance will tell you that these are the coming tires.

Our 1913 Tire Book—based on 14 years experience—tells a hundred ways to cut down tire cost. Ask us to mail it to you.



The Winter Tread

The Last Word in Non-Skids—Double-Thick, Deep-Cut, Immensely Enduring—a Bulldog Grip

Another point where we've reached finality is in this ideal Non-Skid tread.

Not a mere corrugation in the regular tread. It's an extra tread, very thick and tough, vulcanized on to the regular.

So thick that the blocks are cut deep. So tough that they last for thousands of miles.

These sharp-cut blocks present to the road surface countless edges and angles. On any road or pavement they insure a firm grip.

Each block widens out at the base, so the strain is distributed over the fabric the same as with smooth-tread tires. Non-Skid tires, without this, have proved very short-lived.

Note these advantages—the tough, double-thick tread, the deep-cut blocks, their irresistible grip, their distributed strain. Compare these wanted features with the common non-skids. You can see why these treads, now we have them perfected, are fast superseding all other devices.

In wet weather or winter, at least every rear wheel should have these efficient Non-Skids.

THE GOODYEAR TIRE & RUBBER COMPANY, AKRON, OHIO

Branches and Agencies in 103 Principal Cities
More Service Stations Than Any Other Tire

We Make All Kinds of Rubber Tires, Tire Accessories and Repair Outfits

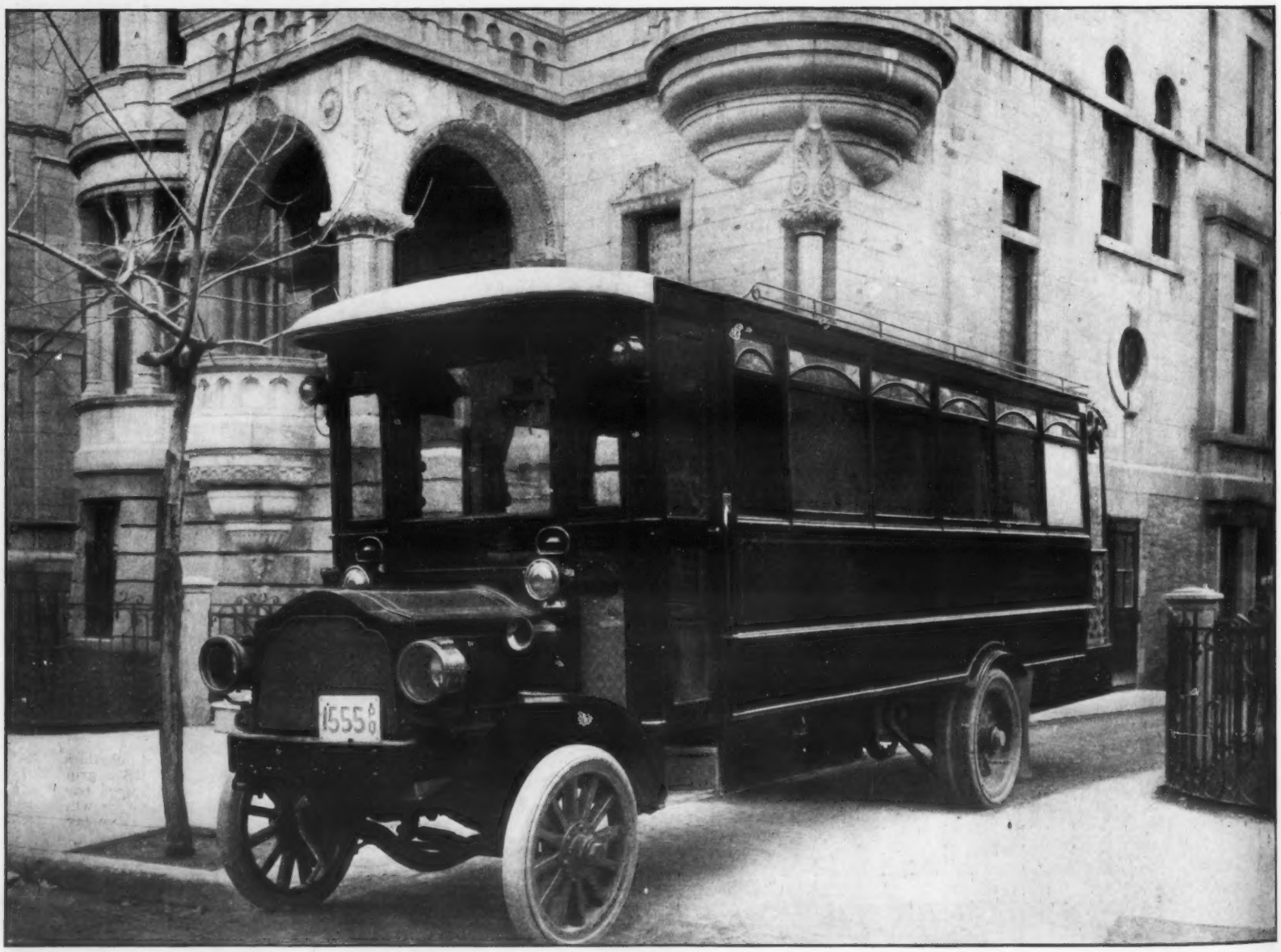
Main Canadian Office, Toronto, Ont.—Canadian Factory, Bowmanville, Ont.

(903)

Courtesy St. Louis Post-Dispatch

An Automobile Sprinkler

The automobile sprinkling cart in the photograph has a cylindrical steel tank with a capacity of 1,400 gallons. It can be operated at a speed of 15 miles an hour and will do the work of five of the usual horse-drawn carts. Instead of throwing water from behind, the water is thrown frontwards

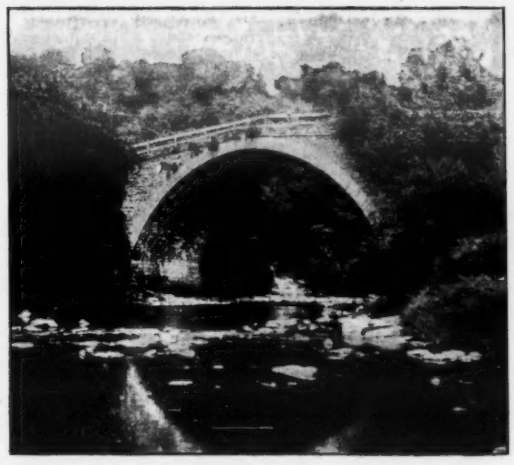


An Automobile Home

This privately owned automobile has a touring capacity for nine passengers and two servants. It is fitted with one stateroom equipped with sleeping berths for five persons and with another having accommodations for four. A kitchenette is in the rear of the car. The length of the body of the car is 25 feet. In lockers underneath are carried planking to strengthen weak bridges, blocks, tackle, tools, and four emergency gasoline tanks

A Coast-to-Coast Highway

Old Cumberland Road through the Narrows, Cumberland, Md.



Bridge on the Cumberland Road over the Castleman River

Part of California's first State highway at San Jose

By LEE SHIPPEY

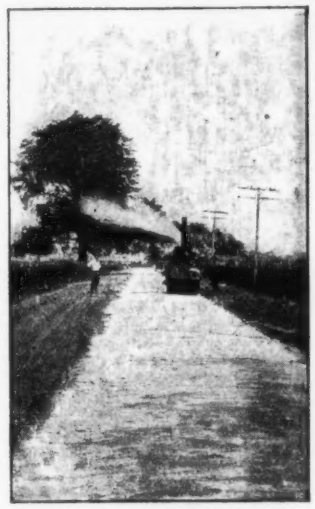
THE National Old Trails Highway Association, the Daughters of the American Revolution and the automobile manufacturers have decided on May, 1915, as the month in which a modern highway across the United States from coast to coast shall be ready for dedication, and there is good basis for the belief that their plans will succeed. The honk of the motor car has awakened every section of the country to the value of good roads, and in every State great forward strides have been made, particularly in the last two years. Thirty-seven States have State-aid road laws, and the number will be increased when this winter's sessions of the legislatures are over. The entering wedge for national aid has been secured, the Sixty-second Congress having appropriated five hundred thousand dollars for aid on post roads and twenty-five thousand dollars for a Congressional commission to consider plans for national aid. And it will be a surprise to those behind the movement if the Sixty-third Congress does not give the aid which will make certain at least one great national highway.

A highway across the country has been the dream of those who love the open road since the nation's infancy. When Ohio was admitted as a State in 1802 the agitation for a road to connect the headwaters of the Ohio River and the Atlantic began, and that year President Jefferson approved a bill providing that such a pike be surveyed to Cumberland, Md. In 1805 Congress authorized the President to appoint a commission to map a road over the mountains, its ultimate goal being St. Louis. Jefferson appointed Thomas Moore and Eli Williams of Maryland and Joseph Kerr of Ohio, and in less than a year these men did their work so well that their recommendations were accepted, and the old Cumberland Pike remains to-day a monument to their judgment.

EARLY HISTORY

CONSTRUCTION work on this road began under the direction of the War Department in 1808, and continued until 1837. It was then turned over to the States. Then the building of railroads to the westward made the need of such a road less urgent, with the result that this dream of our forefathers still is unrealized, though the day of realization appears to be near and certain.

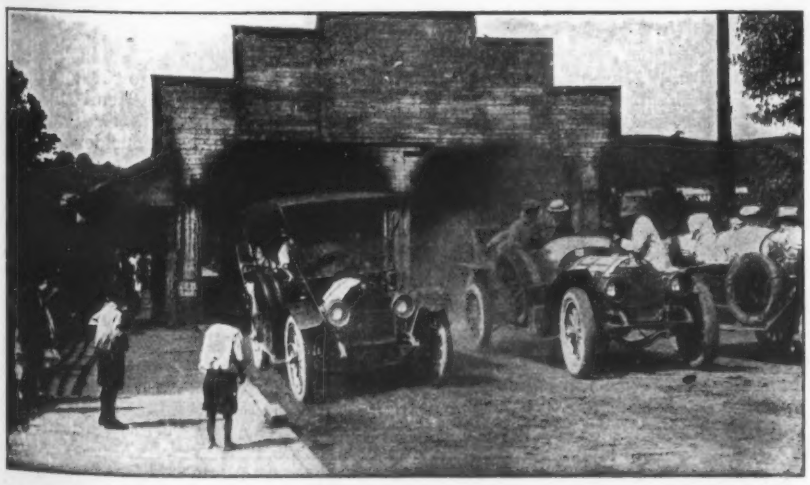
It is most probable that the National Old Trails Highway will be the first ocean-to-ocean road completed. It forms the southern half of the "round-trip" highway logged by Thomas W. Wilby for the United States Office of Public Roads in the autumn of 1911, and was indorsed by the American Road Congress in Atlantic City in October, 1912. A greater part of it than of any other route is improved, and the States and counties all along it are bettering it constantly. It is scenically beautiful and rich in historic interest. It is centrally located and will have the support in Congress of one hundred and eighty-seven Representatives and thirty Senators from the States through which it passes. It is the route most favored by the Daughters of the American Revolution, which organization is planning a pilgrimage over it to the Panama Exposition. And the National Old Trails Highway Association, both through its State Departments, and as a whole, is working persistently both for local improvements and national aid.



Building rock road on the Santa Fe Trail, near Lexington, Mo.

The Old Trails Association was organized in Kansas City, April 18, 1912. Its objects are "to assist the Daughters of the American Revolution in preserving historic trails," and to link in one highway the Braddock Road, the Cumberland Road, the Boon's Lick Trail, the Santa Fe Trail, and "the most historic and scenic trail from Santa Fe to the Pacific Coast." It started out to secure one hundred thousand members, the membership fees to go to a fund for improvement of the highway. Already nearly two hundred and fifty thousand members have been enrolled, and in every State the list is growing. Seventeen State organizations are affiliated with the association, and these are working for good road laws, State aid and county, township, and road district bonds. An idea of how they are working can be gained from Missouri, in which twenty road districts and two townships have voted bonds in the last two years. Missouri, Kansas, Colorado, and New Mexico began working for an improved Santa Fe Trail a year before the national association was organized.

The traveler on this highway will follow the westward march of civilization. While it is intended that it shall be connected with New York, either by the Quebec-Miami road or otherwise, the Old Trails Highway proper will begin with Braddock's road, surveyed by George Washington and cut through the wilderness by General Braddock. At Hagerstown, Md., it will intersect the Lincoln Memorial Highway, leading from Washington to Gettysburg. To St. Louis it will follow the Cumberland Road, which carried civilization to Indiana and Illinois. The Boon's Lick Trail from St. Louis to Old Franklin, Mo., was blazed by Daniel Boone. From Old Franklin the Santa Fe Trail led adventurers, settlers, and traders to Kansas, Colorado, and New Mexico. From Santa Fe the highway will pass through the painted desert, the petrified forests and the Grand Canyon of the Colorado to the magnificent State highways California is building.



The National Road double-drive wooden bridge near Cambridge, O.

WESTWARD HO!

THE Cumberland Road was completed as far west as Vandalia, then the capital of Illinois, by the Government. It was established eighty feet wide, sixty feet of which was paved with broken stone, and Henry Clay pronounced it "the finest road in the world." Many of the original milestones are in perfect condition still, and most of the stone bridges are as solid to-day as when they were built. At Cambridge, O., a covered wooden bridge, built in 1823, still is in service. In every State through which it passes the work of making a modern highway of the old road is in progress, but when it is complete the motorists will drive in safety over many of the same bridges crossed by the pioneers.

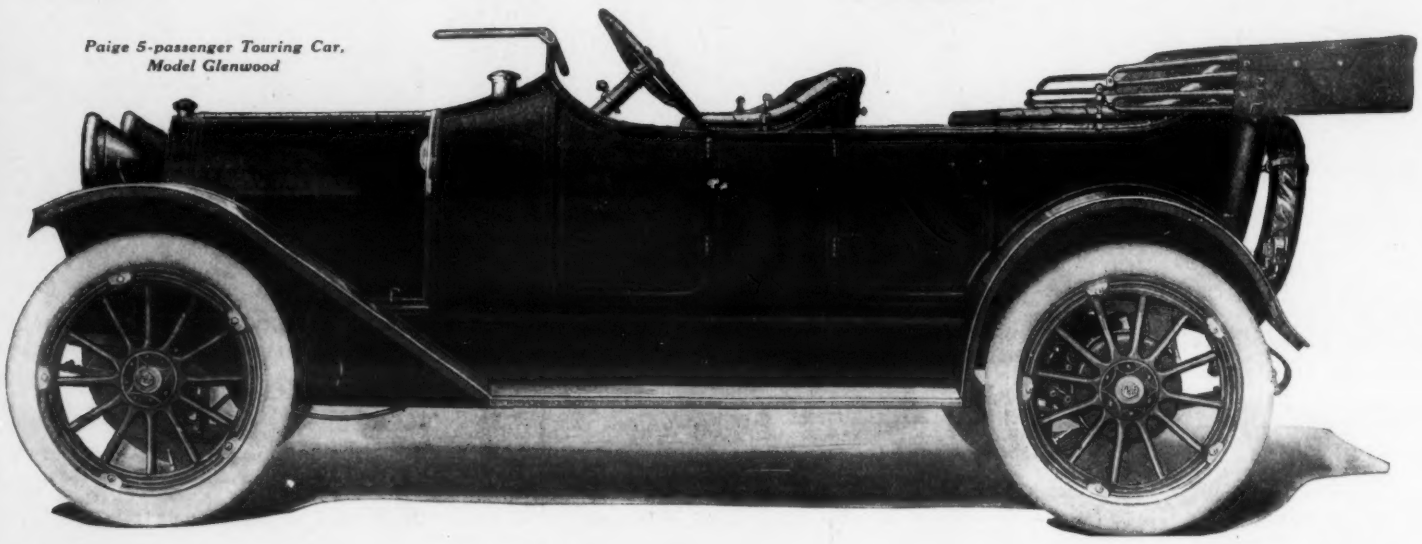
Monument to Clay in recognition of his efforts for a national highway

The next link in the Old Trails Highway, the combined Boon's Lick and Santa Fe Trails, has more than one thousand miles of good road, though not of permanently improved road. Missouri has made a good start toward a hard-surfaced cross-State pike, and the rest of its State highway is as good as earth road can be made. Across Kansas the Santa Fe Trail is a well-maintained earth road for the most part, but the counties have begun voting bonds for permanent improvements. In Colorado and New Mexico a wonderful mountain boulevard is being constructed, both States using convicts in the work. Arizona is doing its best toward a State highway system, and the work in California has been mentioned. Though all these States have been working for better roads locally for several years, the fact that no organized effort for this ocean-to-ocean highway was made before April, 1912, makes the progress toward it inspiring.

Manufacturers of automobiles and automobile accessories are collecting a fund which will insure the completion of this road or whichever one they select, if their plans are successful. At a dinner in Indianapolis, September 10, 1912, it was proposed that all such manufacturers and dealers be called on to contribute

You Men Who Are Going to Buy Cars This Year—See What This Car Offers

Paige 5-passenger Touring Car, Model Glenwood



Gray & Davis Electric Starting and Lighting System

Left Side Drive

Center Control

PAIGE 36

116 in. Wheel Base
34 x 4 in. Tires

Silent Chain Driven Motor Gears

Cork Insert Clutch
4 x 5 in. Motor

$1275

Design and Construction

Left Side Drive, Center Control.
Silent Chain Drive for Cam Shaft, Pump and Generator (enclosed).
Cork Insert Multiple Disc Clutch.
116 inch Wheel Base.
4 x 5 inch Motor, cast en bloc.
Unit Power Plant.
Enclosed Valves.
Selective Type Transmission.
34 x 4 inch Tires, Demountable Rims.
Floating Type Rear Axle.
Full Elliptic Scroll Rear Springs.
14 x 2 inch Brake Drums.
Imported Annular and Hyatt Roller Bearings.
Aluminum Cast Crank and Transmission Cases.
Gasoline Tank under Shroud Dash.
Gas and Spark Controls on top of Steering Wheel.
Dash Adjustment for Carburetor.
17 inch Steering Wheel, Irreversible Gear.
Rear Door 21 inches wide; Front, 19 inches.
10 inch Upholstery, Deep Tilted Cushions.
Long, Clean, Linoleum Covered Running Boards.
All Dash Equipment, Speedometer, Ammeter, Carburetor Adjustment, Magneto and Lighting Switches, etc., imbedded in Auxiliary Dash, Convenient to Operator.

DOES ANY OTHER CAR in the Paige price field offer you the famous Gray & Davis Electric Starting and Lighting System? Possibly, but look it up. See if they do. Several of the $3000 to $5000 cars do, and they *feature* the system. The Paige "36" chassis was *designed* for the Gray & Davis system. It is a *part* of the car.

This car is a revelation in motor car building. No other manufacturer is building such a car to sell at such a price. Maybe later, but not for this year. The Paige "36" is a *next year's car*—ready for delivery now.

Extraordinary as the design and equipment are, the Paige should be considered first just an automobile. And just as an automobile—a dependable, comfortable, handsome automobile—a car of *good materials*, correct construction and fine workmanship—a car that's *always on the job*—the Paige has *earned* high rank.

Any Paige owner—and they are almost *everywhere*—can tell you what a car, *just as a car*, the Paige has *proved* itself

Study Paige design; consider the Paige motor, famous because we have *never* let a Paige motor that wasn't absolutely *right* leave our factory; read carefully what the word *equipment* means when it is Paige equipment; take an expert to see the Paige car and hear what he says; then decide what car you want.

Paige "36" offers five types of body from which to choose *your* car: 5-passenger Touring Car, Model Glenwood; 3-passenger Roadster, Model Westbrook; Raceabout, Model Brighton; 4-passenger Coupe, Model Montrose; 5-passenger Sedan, Model Maplehurst.

Equipment

Gray and Davis Electric Starter.
Gray and Davis Electric Lighting System (generator and electric motor in separate units, storage battery and all connections, switches, etc.)
Bosch Magneto.
Ventilating Wind Shield, built into body.
Silk Mohair Top (tan lined) Side Curtains and Boot.
Stewart Revolving Dial Speedometer.
Heavy Nickel Trimming throughout.
13 inch Electric Head Lights, Parabolic Design—black enamel and nickel.
5 inch Electric Side Lights, Flush in Dash, Crystal Cut Lens.
3 inch Electric Ruby Light at Rear.
34 x 4 inch Tires.
Five Demountable Rims.
Adjustable Foot Rest.
Nickel Robe Rail.
Extra Tire Irons.
License Brackets.
Horn, Pump, Jack, Tools, Tire Repair Outfit, etc., Complete.

PAIGE 25—$950

For those who want a car smaller than the Paige "36", our 1913 line offers the Paige "25", a car value—price considered—just as remarkable as the "36".

The Paige "25" is a car of *proved* success. Even lacking some of the refinements and some of the equipment of this 1913 model, the Paige "25" last year established sensational success.

Careful construction, and *real* workmanship, made this car a leader in the thousand dollar field.

For 1913 we offer the two most popular body types of Paige "25", Model Brunswick, 5-passenger touring car, $950, and Model Kenilworth, a snappy, graceful roadster, $950.

The price—only $950—seems *impossibly* low when you consider the car and its equipment.

Paige "25" is regularly equipped in nickel trimming with rain-vision windshield, silk mohair top, top boot and curtains, Stewart Speedometer, 5 nickel and black enamel lamps, Prest-O-Lite tank, 5 demountable rims, extra tire irons, horn, pump, jack, tools, etc.

See the Paige 1913 Models at the Shows—but write for handsome catalog today.

PAIGE-DETROIT MOTOR CAR COMPANY, 351 Twenty-first Street, DETROIT, MICH.

one per cent of their net earnings for the year to a fund for a highway from New York to San Francisco. The argument that "one good road begets another" was made, and Carl G. Fisher and J. A. Allison, who originated the idea, declared that one such highway would automatically result in the building of so many good roads that the dealers and manufacturers would profit largely by the one per cent investment. Three hundred thousand dollars was pledged at the dinner, and many other contributions have since been secured, one of them a guaranteed donation of three hundred thousand dollars from the Goodyear Tire and Rubber Co. Ten million dollars is the sum the manufacturers are trying to raise by this plan.

But if the Old Trails Highway is the first road to be completed across the country, it will not be the only one for long. Fifteen interstate, national or international associations are working for better roads in this country, besides the American Society of Civil Engineers, the National Grange, the Farmers' Union, the Rural Letter Carriers' Association, the Congress of Mothers, the Southern Commercial Congress and the Travelers' Protective Association. The National Highways Association is demanding Federal aid for 51,035 miles of connecting and intersecting highways to reach every section of the country, with Northern, Central and Southern roads from coast to coast and Atlantic, Pacific and Mississippi roads from North to South, connected by thirteen trunk highways and forty link lines.

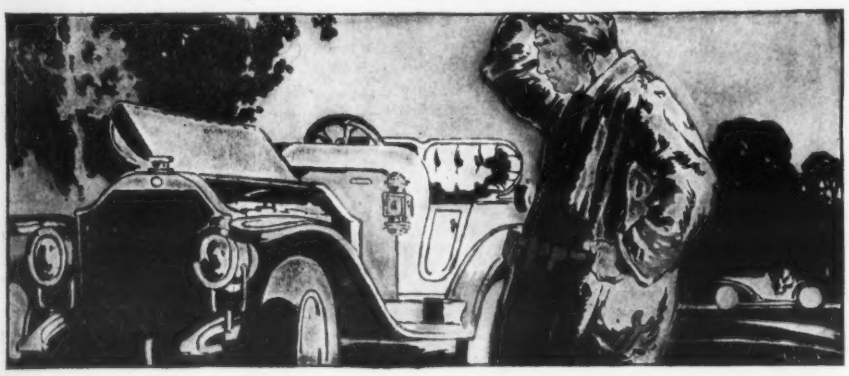
That several interstate and national highways will be built whether national aid is given or not, however, is practically certain. The California link in the road from San Diego to Vancouver is assured, and the Pacific Coast Highway Association is working for bond issues for its completion through Oregon and Washington. The whole of the "circular" highway running from New York through Buffalo, Niagara Falls, Cleveland, Chicago, Des Moines, Omaha, Cheyenne, Salt Lake and Reno to the Coast, and returning to New York by way of the Old Trails, has been materially improved since it was suggested by the Office of Public Roads last fall. In Utah one hundred miles of mountain road around the northern end of the Salt Lake is being improved by bond issue. In Wyoming old stage trails have been marked and put in condition for motor travel.

The Santa Fe Trail near Wellsville, Kans.

In the East the Quebec-Miami International Highway Association is doing splendid work, and State highway systems are being developed all along the Atlantic Coast. The objects of this association, besides the building of a modern highway from Quebec, Canada, to Miami, Fla., are to strive for wise, equitable and uniform road legislation, scientific local road systems, and the utilization of convict labor. The latter purpose is especially noteworthy. The experience of every State which has tried it goes to show that good roads can be built by convict labor at little expense to the taxpayers, and that the outdoor work is good for the physical and moral health of the prisoners.

Nowhere is the progress for good roads more impressive than in the South, which until recent years was noted for bad roads. The Crest of the Blue Ridge Road is being built through Virginia, the Carolinas, Georgia, and Tennessee without national, State, or even county aid. Public-spirited men who believe the Appalachian scenery cannot be surpassed are contributing the money. A highway from New Orleans to Mobile also is projected, and an earnest movement for better roads is apparent everywhere. More counties in Texas have voted road bonds in the last two years than in any other State, with Ohio second and Tennessee third. North Carolina has more local road improvement organizations than any other State, with Georgia second, and Ohio third. The United States Office of Public Roads has found the South as a whole more responsive to its efforts for better roads than any other section, except that the States of Georgia, South Carolina, Mississippi, and Arkansas have not yet created highway departments. It is a difficult matter for any State to build up a scientific system of roads or get best results for the money spent without the aid of such a department.

The widespread demand for better roads is shown by the fact that fifty road bills were introduced in the Sixty-second Congress by Senators and Representatives from every section of the country, and it can be presumed they were acting in deference to the sentiment of their constituencies. This demand for better roads necessarily is resulting in the improvement of local roads first of all, and the era of good roads is bringing more comfort, more sociability and more prosperity to the farmer as well as more pleasure to the motorist.



Motor Car "Don'ts"

By A. C. JOHNSON

THE man who aspires to become a motorist will find himself from the very beginning on a small island of Possibility, completely surrounded by a sea of "Don'ts." No other sport presents so many problems for the solution of the neophyte as does motoring. The solutions of some of these are obvious enough, while others can only be arrived at through the bitter teaching of experience or the advice of those who have been through the mill.

Even before you become possessed of the first requisite of the motorist, a car, the most serious problem of all presents itself.

Thus we come to the first Don't.

Don't be guiled into buying a second-hand car without taking expert and unprejudiced advice in the matter. While the judicious buyer of a second-hand car can get more than his money's worth, the man who rashly buys a used machine more often than not finds himself in possession of something fit only for the scrap heap. Put it down as an axiom: Never buy a second-hand car without first taking it down. If you cannot perform the operation yourself, and few can, pay some one whom you can trust absolutely to do it for you. You will never regret spending the money. Even after you are sure that your used machine is in good condition, be sure that you are getting something besides the bare car. Remember that while the price may seem low, by the time you have purchased essential accessories, to put the car in running order, you will have added a tidy sum to the first cost.

On the other hand, if you eschew the second-hand car and go direct to the agents for a new machine, don't be in a hurry.

Don't, if there are only two in your family, while the man next door has a houseful of children, buy a seven-seated touring car.

Don't select a car by the color of its enamel.

Don't forget to ask questions and don't let the salesman answer them in blank verse. Pin him down to facts.

Don't be too proud to accept the advice and assistance of a well-posted friend. On the other hand, don't allow advice to smother your own judgment.

After you have purchased your car—

Don't imagine that it is possessed of a chrome steel constitution and absolute immortality.

Don't forget that what castor oil is to a baby, lubricating oil is to a car. Learn to know the noise of your motor as a mother understands the cry of her baby, also inject the remedial oil.

Don't begrudge a hard-working motor plenty of fodder—beg pardon, gas. In exact proportion to the work returned will be the consumption of gasoline.

Don't despise a tiny gasoline leak. Trace it to its source as you would follow the footprints of a man who had stolen your last dollar.

Don't be carelessly familiar with your gas tank. After the gasoline has been drawn out, a highly inflammable gas remains that often blows up the unwary tinkerer with a leaking tank.

Don't use the same funnel for giving your motor a drink of water and a "feed" of gasoline. Disaster lies that way.

Don't use a dirty funnel. If it has accumulated a layer of soil, take a minute to clean it out thoroughly.

Don't run away with the idea that the most plentiful supply of gas can do its work without a good ignition system.

Don't forget that while electricity can circle the globe in a second, it balks at a bad joint in the wiring of your ignition.

Don't, unless you are a past master motorist, monkey with your ignition system. You might as well go into the hospital without training and try to operate on unfortunate patients.

Don't make your car a museum for a display of antique accessories.

Don't forget that shoes will make up by far the largest item of your upkeep bill. The man who has any desire to spare his pocketbook will treat his tires with the same respect and solicitude that he bestows on himself.

Don't fall into the common error of washing tires off with kerosene. Oil of any sort bears about the same relation to rubber that strychnine does to the human stomach.

Don't think that after you have washed your tires you have done your whole duty by them.

Don't fail to remember that insignificant cuts on the surface of a tire are simply the outline sketch of a set of deep gashes, which use will rapidly turn into a completed picture.

Don't think that filling in the little cuts in the tire surface ends the job. Unless the material is vulcanized afterward, the operation has simply been writing on water.

Don't forget that the most enjoyable part of motoring lies in the touring.

Don't think that the man who goes tearing around the country at thirty or forty miles an hour is touring. He is simply risking his own life, which is a small matter, endangering other people's, which is a serious matter, and teaching outsiders to hate motorists and motoring, which is a pity.

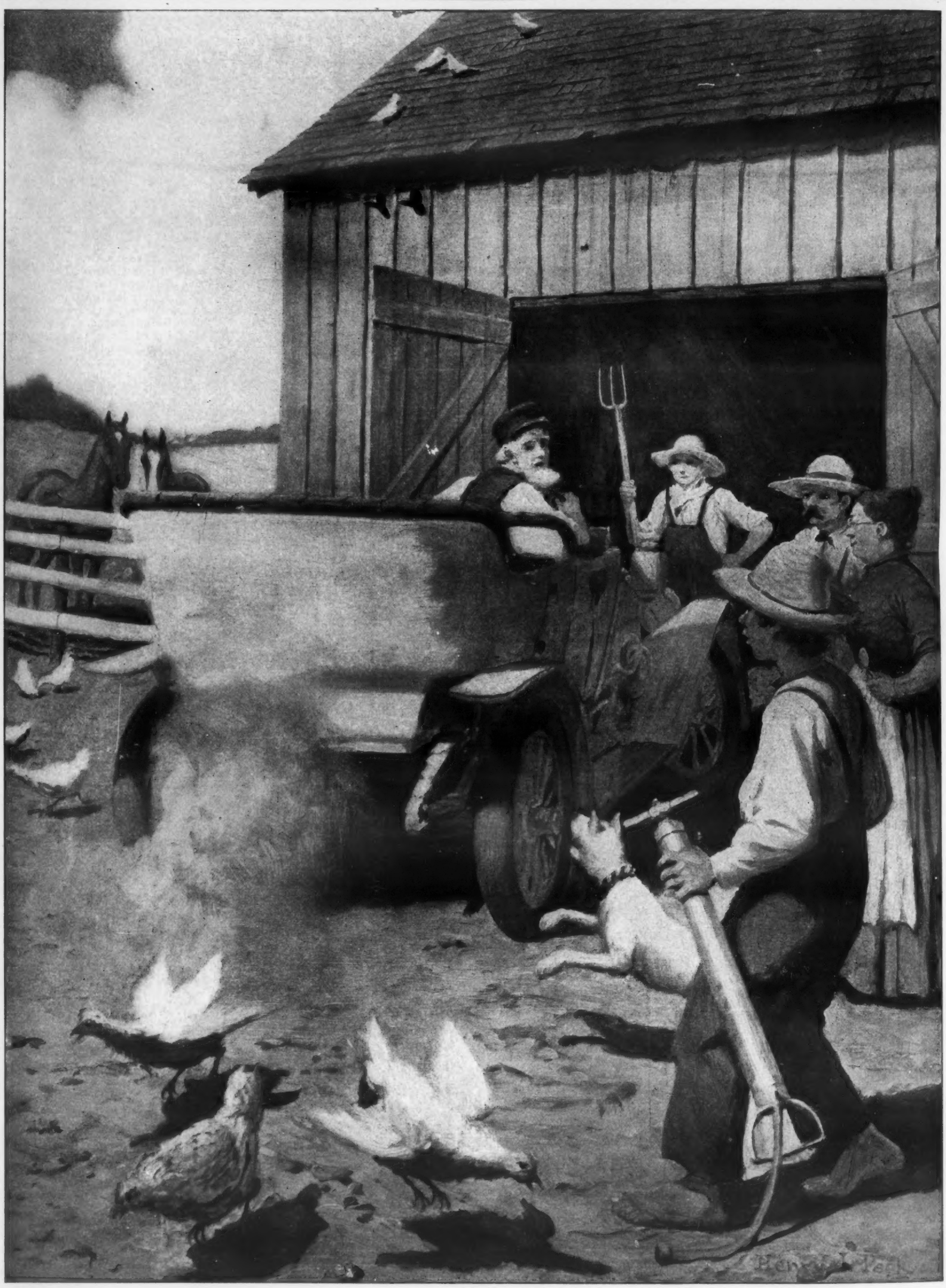
Don't assume that the rules of the road are wholly iniquitous; they were formulated for your protection as well as control. The man who is eternally berating road regulations is generally the very road hog whom they were meant to reach.

Don't think that the higher powers have decreed that you should have a divine right to the center of the road, while the farmers must thankfully accept the gutter.

Don't talk of "hard luck," if you insist on driving fifty miles an hour, and your machine insists on trying to climb a telegraph pole.

Don't take a vacation after getting home from a muddy drive. Give the car a bath first, then take your own.

Don't forget in making up the balance sheet of your car's cost that there is a credit item which far outweighs any expenditure that you have made. You have spent some money on the car, but the car has taken you out into the sweetness and light of God's out-of-doors; has filled your lungs with good clean air; has browned your cheeks with the caress of the sun; has steadied your nerves; has added twenty years to your life, and by the same token has made every minute of the time better worth living.



The Pride of the Farm

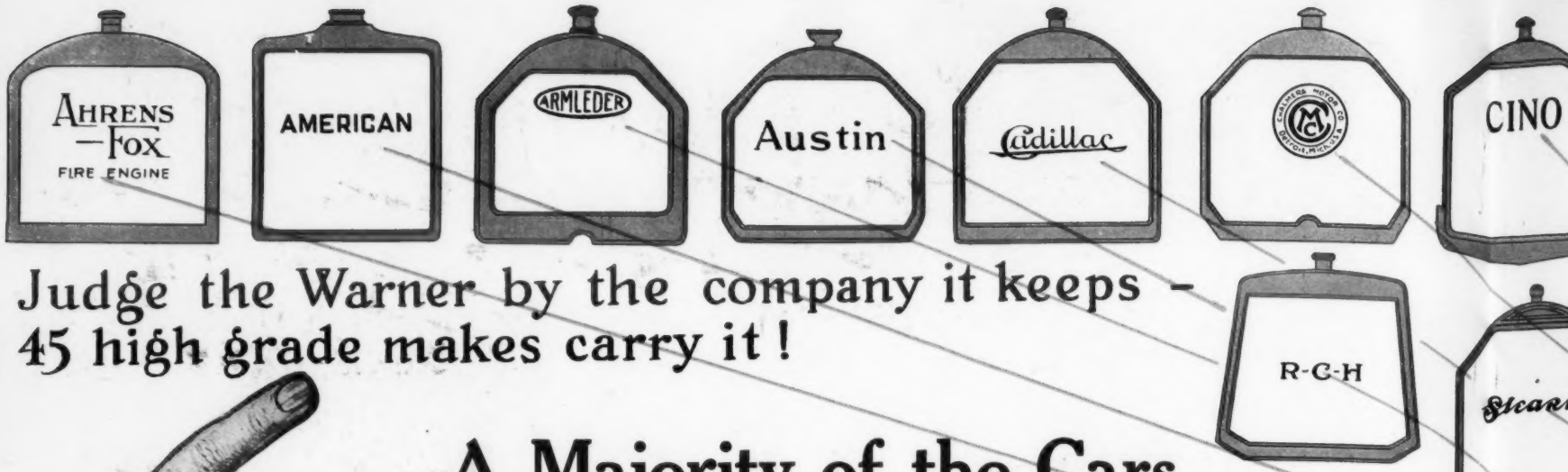
A new force has come into being on the farm, dispelling many an old monotony and finding many an intensely practical use. The farmer is learning that the automobile is indispensable to his daily life, and it is taking the place of favorite once held by his pet pair of fast roadsters. So the farm barn is in process toward a garage

The AUTOMOBILE
Official
BLUE
AUTOMOBILE
Official
1913
BLUE BOOK
℞
The Warner Auto-Meter + the Blue Book for an accurate touring guide
Jersey South Coast Section
Route 235
58.2 12.2 End of road; meeting trolley, bear left into Haddon Ave., avoiding left fork of trolley (59.0 m). (City Map, page 242.)
60.1 1.9 CAMDEN, N. J. Federal St. & Haddon Ave. Turn left with one line of trolley on Federal St., direct to
60.9 0.8 CAMDEN—PHILADELPHIA FERRY. Ferriage, 20-25c. Frequent service across the Delaware. Straight out from ferry landing onto Market St.
62.1 1.2 PHILADELPHIA, Pa. East Side of City Hall.
The Rittenhouse, Chestnut & 22nd Sts.
Aldine Hotel, Chestnut St. bet. 19th & 20th.
Bingham Hotel, Roof Garden, 11th & Market Sts.
American Garage & Machine Co., 1411-13 Locust St.
For diverging routes see Index Map, page 239.
Route 235—Atlantic City, N. J., to Philadelphia, Pa.—67.6 m.
Route Map, page 224. Reverse Route, No. 286.
Via Mays Landing and Malaga. An agreeable option but less direct than Route 234. Fine gravel practically all the way.
Descriptive Outline—For those desiring to make the round trip from Philadelphia an agreeable variant is offered on the return trip in this route. Good state road is followed thru Mays Landing to Malaga, where the route from Cape May is joined.
MILEAGES Total Intermediate
0.0 0.0 ATLANTIC CITY, Atlantic & N. Carolina Aves. South on Atlantic Ave. with trolley, past 2 RR. stations.
1.8 1.8 4-corners; turn right on Albany Ave. following trolley—numerous wood bridges across the marshes.
6.6 4.8 Shore Road. Cross RR. at Pleasantville Sta. (6.7 m).
6.8 0.2 Turn next left into Washington Ave.—sign, "Mays Landing." Cross RR. (17.5 m—18.9 m) into Main St.
19.5 12.7 MAYS LANDING; turn left on Mill St., across iron bridge.
19.7 0.2 Right-hand road; turn square right—sign, "Philadelphia." Straight on is Route 240 to Cape May.
20.1 0.4 Fork; bear left across RR. (20.6 m), again cross RR. at Richland (27.9 m). Bear slightly right across RR. at Buena Vista Sta., again crossing tracks at Landisville Sta. (32.1 m). Follow direct road, crossing RR. (38.5 m) into
39.3 19.2 MALAGA, 4-corners, turn right; cross RR. (40.2 m).
42.7 3.4 [illegible]KLINVILLE, irregular 4-corners at station; turn [illegible]ly right on Central Ave., crossing branch RR. [illegible], thru Clayton (45.5 m); cross RR. (48.1 m).
[illegible]eep right, disregarding repair shop sign, passing [illegible]utskirts of Glassboro.
[illegible] just beyond water tower, keep right.
[illegible]ork, bear right; cross Mantua Creek 51.2, avoiding right [illegible] fork beyond; straight thru Hurffville 52.9 into
[illegible].1 FAIRVIEW, 6-corners, turn diagonally left.
[illegible].2 1.8 Diagonal 4-corners, turn right into
60.8 4.6 WESTVILLE, 5-corners, bear right across bridge (Timber Creek). Cross RR 61.4, paying 8c toll 61.7.
Page 228
MILES PER HOUR
15 20 2
TOTAL
7 8 4 6 9 3
DISTANCE
WARNER
AUTO-METER
TRIP
0 0 6 6
WARNER INSTRUMENT COMPANY
BELOIT, WIS, U.S.A.
No
PATENTED
NEW JERSEY

Warner accuracy guarantees Blue Book accuracy.

Thousands of motorists accept, without question, the information given in the guide because of the implicit faith they have in the Warner Auto Meters through which it was compiled.

A car without a WARNER is like a ship without a COMPASS!



Judge the Warner by the company it keeps — 45 high grade makes carry it!

A Majority of the Cars in Madison Square Garden are Warner Equipped

NEVER before has Warner supremacy been so emphasized. In the big annual review of the cream of the automobile industry the Warner is the dominant speedometer. A majority of the cars in the 1913 Madison Square Garden automobile show are Warner equipped. Six cylinder cars, four cylinder cars, open cars, closed cars, gasoline cars, electric cars—the best and finest all bear Warner Auto-Meters. With each manufacturer the adoption of the Warner as regular equipment becomes the final, the master stroke; it is the motor car blue ribbon.

But this is the veriest indication of the overwhelming demand for Warners. In Detroit and Indianapolis, the western motor hubs, more than 100,000 new 1913 models are being regularly equipped with Warners. This is exclusive of the cars thus equipped in 1912 and previous years.

The makers pin their faith to the Warner. Those who do not equip with Warners fail to mention other than "a speedometer" in their advertising copy. The great majority who specify Warners emblazon the name proudly in each piece of newspaper and magazine copy, in every booklet, in every catalogue.

And this speedometer situation is no happenstance. Every one of the manufacturers were willing—yes, glad—to pay 100 per cent more for the Warner. The Warner costs just that much more than other speed indicators.

The Warner is the most highly developed speed and mileage indicator in the world. It is built like the finest watches. No other speedometer is jeweled with the finest sapphires—as is the Warner. It possesses imported Hoffman ball bearings. And the odometer construction is exclusive—one that every other speedometer manufacturer has been trying for years to imitate.

Watch the cars at the show. See how the Warner is a sure indication of a quality car. If it is a part of any car you have in mind, rest assured it is a first quality machine.

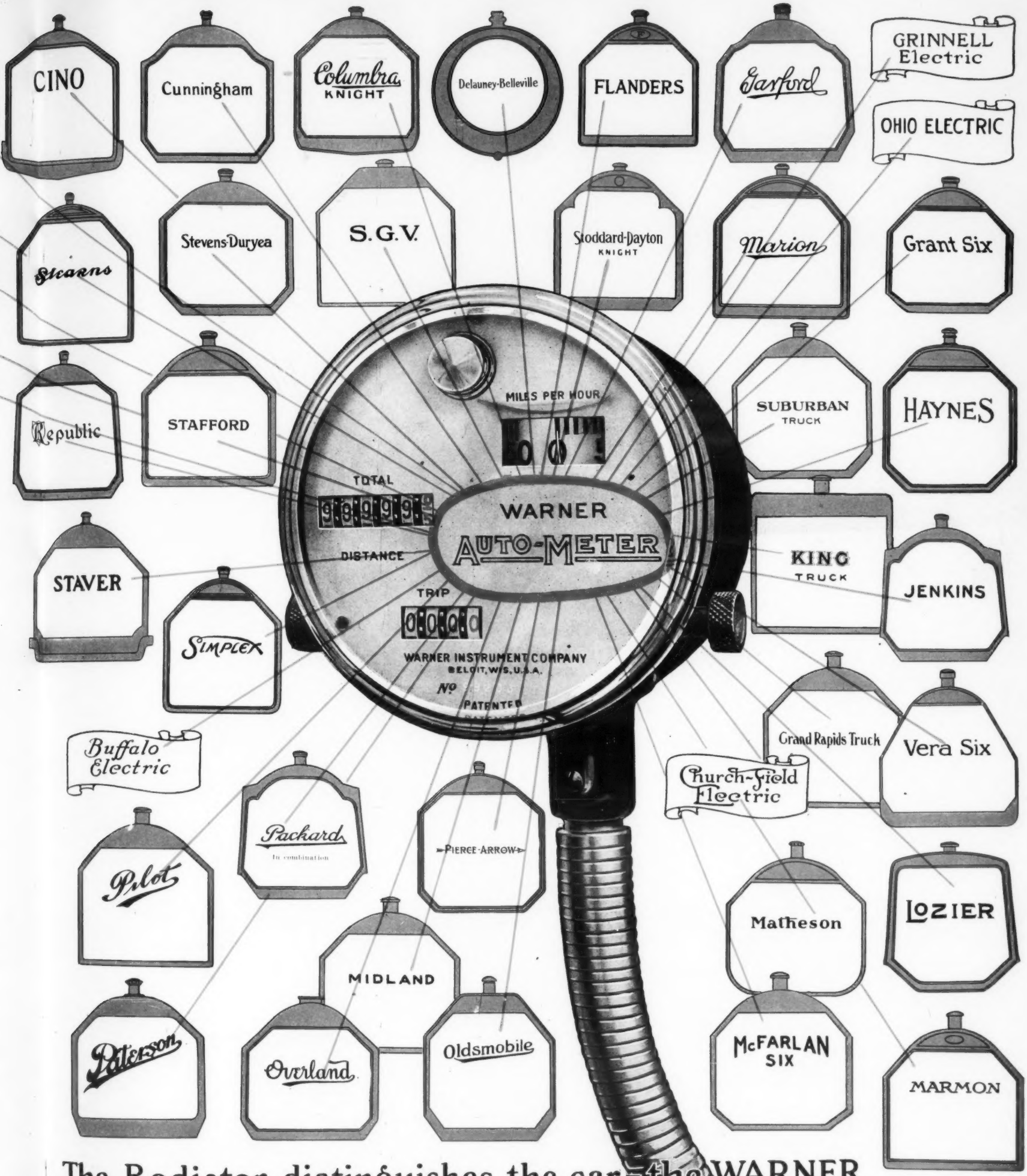
Day in and day out, at every dealer's, in every city, you will find the price of the Warner Auto-Meter the same. We strictly maintain Warner price; it is the mark of a standard product. There is no inducement offered aside from guaranteed merit.

For sale by leading dealers the world over, and at our own branches. Priced from $50 to $145.

Write us direct for our handsome catalogue.

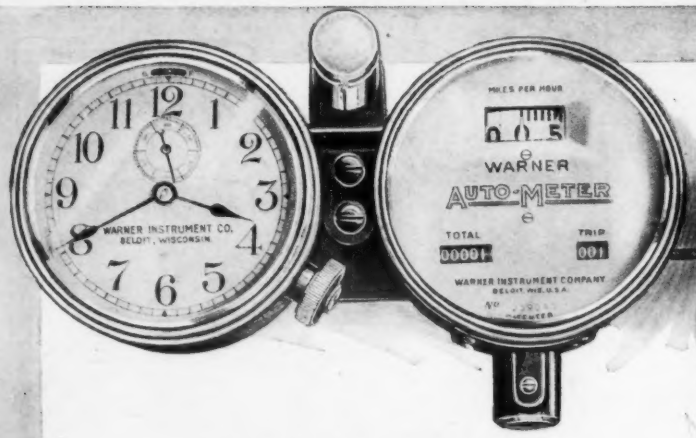
The Warner Instrument Company, Beloit, Wisconsin

NO WARNER HAS EVER WORN OUT!



The Radiator distinguishes the car—the WARNER CROWNS it and is its brand of Quality; its stamp of Superiority! The WARNER *never* slips a cog or skips a tenth mile. Absolute Accuracy Always Assured!

NO WARNER HAS EVER WORN OUT !



MODEL 34—*The Midget Twin*

ON account of the intense popularity of the Model O-2 Warner Auto-Meter—or Big Twin—we have designed the Model 34 as shown above. Many people who have smaller cars fancied the Model O-2, but could not use it on account of its size—to these the Model 34 will especially appeal. This instrument is very similar to the Model 32, while the Clock is of the best quality and will keep correct time. It is stem wind and stem set, and contains an eight-day movement.

Diameter of Instrument, 3½ inches.
Diameter of Clock, 3½ inches.
Season Odometer registers to 10,000 miles and repeat.
Trip Odometer registers to 100 miles and repeat.
Indicates all speeds up to 60 miles per hour.
Standard Finishes—Brass, Nickel or Black Enamel.
Price complete, ready to attach—Stem Wind, Stem Set Clock, Electric Light, $90.00.

Model 35. Same as Model 34 but registers speed to 100 miles per hour. Price $90.00.

MODEL M-2 (*on right*)

THIS is the same as our Model K-2, with the addition of high grade Chelsea Clock 3½ inches in diameter, with outside wind and set.

Diameter of Instrument, 4½ inches.
Diameter of Clock, 3½ inches.
Season Odometer registers to 100,000 miles and repeat.
Trip Odometer registers to 1,000 miles and repeat.
Indicates all speeds up to 60 miles per hour.
Standard Finishes—Brass, Nickel and Black Enamel with Brass or Nickel Bezel.
Special Finishes—Black Nickel, Black Copper or Gun Metal.
Price complete, ready to attach, $125.

Model N-2. Same as Model M-2 but registers speed to 100 miles per hour. Price $125.

MODEL O-2 (*below*)

THIS model was designed for those who desire the ultimate in quality and appearance. Nothing better in a speed indicator can be purchased at any price. Nothing more beautiful or harmonious in appearance is obtainable.

Diameter of Instrument, 4½ inches.
Diameter of Clock, 4½ inches.
Season Odometer registers to 100,000 miles and repeat.
Trip Odometer registers to 1,000 miles and repeat.
Indicates all speeds up to 60 miles per hour.
Standard Finishes—Brass, Nickel or Black Enamel with Brass or Nickel Bezels.
Special Finishes—Black Enamel, Black Copper or Gun Metal.
Price complete, ready to attach, $145.

Model P-2. Same as Model O-2 but registers speed to 100 miles per hour. Price $145.

MODEL 32

THE Model 32 Auto-Meter as shown above is one of our 1913 dial face instruments. It is exactly the same in principle and construction as the well-known K and M type Auto-Meters and has been pronounced by those who claim good judgment in such matters to be one of the handsomest instruments we have ever produced. The face of the dial is silvered and the odometer figures are in white on black background.

Diameter of instrument, 3½ inches. Season Odometer registers to 10,000 miles and repeat. Trip Odometer registers to 100 miles and repeat. Indicates all speeds up to 60 miles per hour. Standard Finishes, Brass, Nickel and Black Enamel.

Price complete, with electric light, $55.

Model 33, same as Model 32, but registers speed to 100 miles. Price complete with electric light, $55.
Model 30, same as Model 32, without electric light. Price $50.
Model 31, same as Model 33, without electric light. Price $50.

MODEL K-2 (*above*)

THIS model is becoming daily more popular with owners of good cars, because of the many desirable features impossible to incorporate in our smaller models. It is equipped with hooded electric light connection under the glass.

Diameter of Instrument, 4½ inches.
Season Odometer registers to 100,000 miles and repeat.
Trip Odometer registers to 1,000 miles and repeat.
Indicates all speeds up to 60 miles per hour.
Standard Finishes—Brass, Nickel or Black Enamel with Brass or Nickel Bezel.
Special Finishes—Black Nickel, Black Copper or Gun Metal.
Price complete, ready to attach, $75.

Model L-2. Same as Model K-2 but registers all speed to 100 miles per hour. Price $75.

The Warner Instrument Company, Beloit, Wisconsin

BRANCHES

Atlanta, Buffalo, Cincinnati, Denver, Indianapolis, Los Angeles, Philadelphia, Portland, Ore., Seattle, Boston, Chicago, Cleveland, Detroit, Kansas City, New York, Pittsburgh, San Francisco, St. Louis
Canadian Branch: 559 Yonge St., Toronto, Ont.

Perils of blinding dust which nearly caused the racing drivers to crash into the fence at the turn of this bad mile track; the promoter of this meet was suspended

Automobile Racing in America

A Sport Which Has Been an Important Factor in Perfecting the Motor Car

By FRED J. WAGNER

AUTOMOBILE racing as a sport is the most sensational brand of sport I know of, and at the same time is about the most expensive. Possibly aviation is more expensive than automobile racing, but as one with inside knowledge of motor contests and what they cost I doubt it. Certainly an aeroplane event is not as spectacular as the sight of two dozen or more cars coming down the stretch of a speedway closely bunched and all running at close to a 95-mile-an-hour clip. Then, too, aviation is infinitely more dangerous.

There are numerous angles at which automobile racing may be viewed. My observation of the game has been entirely as the starter of most of the big races and scores of small ones. To the mind of the general public, automobile racing is a dangerous sport which has cost lives. This is indeed unfortunate, but at the same time the public does not stop to think that it was principally owing to speed contests being held in this country and in Europe that automobiles have attained their present state of near perfection. The people who ride about in comfortable automobiles, which only rarely break down or prove unreliable, do not stop to think how racing cars driven under extreme conditions taught designers where the weak parts first developed and furthermore taught them how to improve their product so that these same mechanical flaws would not develop in touring cars under less strenuous conditions.

It was through racing machines that designers of early models a decade or so ago learned that they must build cars lighter in weight; that they must improve their transmission and rear-axle construction, ignition systems—introducing differentials in the former and the magneto to replace the battery in the latter. By breaking radiators in racing they gained the knowledge of how to construct radiators that would stand the strain of all-round work and keep the motor cool at all times. The carburetor, whose construction could be improved so that it would insure proper carburetion at high speed, could be improved to work better at slow speed. Tire manufacturers, through watching how their products wore out in speed contests, found out how to build rubber tubes and casings that would stand up for several thousand miles on pleasure cars.

These and thousands of other details were learned in racing and racing alone. Tours and endurance contests undoubtedly taught makers much, but not as pointedly or as quickly as long-distance speed contests did.

By degrees, during the last few years, the Contest Board of the American Automobile Association, cooperating with the Manufacturers' Contest Association, which is an association of automobile makers, has evolved a set of racing rules which are strict and aim at minimizing danger in track, speedway, and road races. Largely due to these carefully drawn rules, there were fewer accidents in racing during the year 1912 than in any previous one. Whereas each former season several lives have been lost, just two were lost this season in connection with a race in America. David Bruce-Brown and his mechanician, Tony Scudelari, were killed while practicing for the Grand Prix race at Milwaukee early in October. The sad accident occurred when that great young driver, whom I had known since his boyhood and who already had twice won the Grand Prix race, blew a tire on a narrow section of the course. He had just made a record lap for that course—eight miles in 5:53—and for one of the few times in his driving career used bad judgment in driving at such a dizzy pace on old tires.

THE DAWN OF MOTOR RACING

TWELVE years ago, about the time that automobile racing was growing popular abroad, some American sportsmen, also American manufacturers, and several importers of cars, decided to import the sport to this country. Among the sportsmen were such as William K. Vanderbilt, Jr., Foxhall Keene, W. Gould Brokaw, George Heath, the late Richard Croker, Jr., E. H. Green, Albert H. Bostwick, A. L. Riker, W. C. Temple, Harlan W. Whipple, and others. Some of these, like Vanderbilt, Keene, Croker, and Heath, drove their own machines in races about that time or a few years later. The importers of high-priced foreign cars were anxious to get into the American market and the American makers were just as anxious to fight them in open competition.

Even at that early date it was realized that the sale of motor cars could be furthered only by wide publicity. The general public was waiting for automobiles to be improved and perfected and had to be urged to buy. The automobile enjoyed a peculiar position. It had its sporting as well as its commercial side, and this is true even to-day. Sportsmen used to enter and still enter races for the fun they can derive in piloting their cars around a course at sensational speed, and on the other hand manufacturers for some years have been building cars and maintaining racing teams for speed contests, not because of sporting blood running in their veins, but because advertising and wide publicity for their product could be derived from racing.

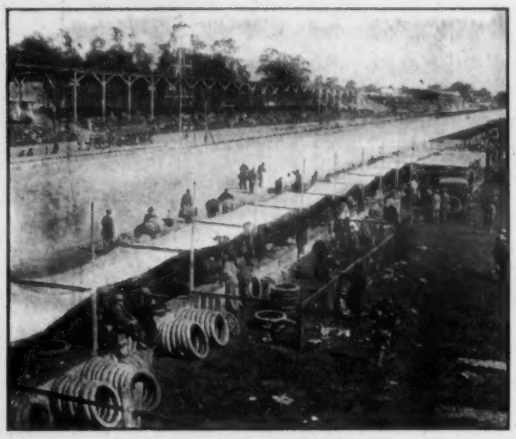
Racing not only improved cars but it promoted their sale, and many of the concerns now doing a thriving automobile business would have been bankrupt long ago had not big sales of their product resulted from victories in contests—victories which called the attention of the public to their product. For example, the National car became known to the public chiefly through its victories on speedways all over the country; the Simplex and Lozier through winning 24-hour races and road events; the Mercer by capturing so many light-car races; the Marmon through winning at Indianapolis, Savannah, Santa Monica, and elsewhere; the Alco by virtue of a two-time Vanderbilt Cup race victory; the Locomobile through being the first American-made car to win the Vanderbilt Cup; while dozens of others that could be named, including the Chalmers, Cole, Thomas, Pope, Abbott-Detroit, White, Stutz, Buick, and many more I could mention, gained their prestige through road and track victories. Among the imported cars the Fiat was made famous through securing first places in road races here and abroad, while the track campaigns of the Fiat "Cyclone" impressed the people in many cities. The Renault, Panhard, Isotta, Benz, Mercedes, all became known on this side of the water through racing victories alone. Rarely were any of these foreign makes put into endurance or reliability runs.

Recall the early days of the industry and possibly the first foreign car you ever heard of was the Panhard, and long before any of us knew anything about automobiles we had the name of this car impressed on our minds and took it for granted that it was a leading make. The name was on the lips of youngsters on the street, and chorus girls used to talk about mythical friends, or otherwise, "who owned big Panhards." This was all because news had reached this country of the victories of this make of car abroad.

In the year 1904 William K. Vanderbilt, Jr., offered his famous perpetual challenge cup, which has been contested for eight times—six of the great classics being held on Long Island, one at Savannah, and the last one at Milwaukee. The cup has been won each season respectively by George Heath, Victor Hemery, Louis Wagner, George Robertson, Harry Grant (twice), Ralph Mulford, and Ralph De Palma. It was the original intention of the donor of the cup to encourage the development and the improvement of American-made cars.

From the outset, it began to serve its purpose and continues to do so. I doubt if a single manufacturer out of all the hundred-odd who have built racing cars ever designed and built a single speed machine which did not teach new points possible to incorporate in regular stock models for the betterment of their product. There is scarcely an automobile company, save a few recently organized, which has not at some time or other raced its cars.

Earlier than the running of the first Vanderbilt Cup



Scene at the repair pits at the Indianapolis Speedway during practice trials

race, however, track racing had its inception here. The first track race was at Washington Park, Chicago, in 1899. Most of the entries were steam cars. A few years later Barney Oldfield made his nation-wide reputation on race tracks. Those were the days before we had really fast cars—days when a mile a minute on a dirt track was considered hair raising, and a mile in 56 seconds phenomenal. The present world's record for the mile track, held by Burman, is 47.85 seconds. There were a number of others besides Barney in the early part of the last decade who drove cars, but they were hardly as picturesque as he with his old "999" and the "Green Dragon." A little over two years ago Oldfield secured a couple of really fast mounts with which he regained a number of his world's records that had been lifted by Ralph De Palma, and even today Barney is a bigger drawing card in the smaller cities and towns than De Palma, Burman, or Disbrow. De Palma has had a big following for several years, and is generally acknowledged among experts as the greatest exponent of the track-racing game. He won the last Elgin road race and Vanderbilt Cup as well as many other notable events, and has driven most sensationally in big events here and abroad, but Barney probably would draw the larger crowd in nine towns out of ten.

BARNSTORMING

OLDFIELD was about the first to start the "hippodroming" or circus style of racing—that is the sort which is scarcely real racing, although it may be spectacular. Oldfield has barnstormed the country for years holding his own meets with numerous hired team mates in his string, among them at various intervals Charles Soules, Walter Christie, Ben Kerscher, and others. Of course at meets run by Oldfield's manager Barney always would have to be the star and of course he would drive the fastest car in the stable. Hence no matter how hard the star's team mates drove they had little chance of winning if they had wanted to. At close finishes Barney was an artist, often managing to win by less than the width of a tire.

The game used to be for a three-heat match to be run between the star and his team mates—best two out of three the winner. The star, of course, would win the first heat to the great applause of the spectators, who were not aware of the fact that all the cars that competed belonged to the same stable. Then the second heat would be run, and perhaps to the surprise of many one of the other men would win! And then for the final heat—well, the star always won that heat and race unless something went wrong with his car! In the tall-grass towns occasionally amateurs would try to go up against the team and compete with them, and almost invariably the team had no trouble beating them. However, to Oldfield's credit it must be said that when pitted against drivers of ability at big meets he had to drive his best—sometimes winning and sometimes losing.

Of course it is not to be inferred that all track racing was done in this fashion by any means. At the bigger meets there is no hippodroming for the reason that outside entries force a racing team to the limit. Bob Burman and his team and Louis Disbrow's string of drivers hippodrome in the smaller cities and towns where they do not encounter outside entries. It is true that all of the above mentioned break world's records now and then and do some mighty sensational driving, usually giving the spectators a real "show," and in big road or speedway races do *real* driving. Upon certain occasions, when the teams of Oldfield, Disbrow, or Burman—all of whom hold world's records, by the way—have clashed at a meet with other drivers of class the spectators have seen some sizzling racing with one combination fighting an individual star driver. Ralph De Palma and others, driving as individuals, have met these teams on certain occasions and walloped them, too.

FOUR SORTS OF RACING

ROUGHLY divided, there are four distinct sorts of automobile racing—road, motordrome, mile track, and beach. Road races have been held annually or otherwise at Santa Monica, Cal.; Oakland, Cal.; Tacoma, Wash.; Cincinnati, Ohio; Fairmount Park, Philadelphia; Savannah, Ga.; Elgin, Ill., and Milwaukee, Wis. The last city made its first attempt at staging a meet in 1912, the Vanderbilt Cup and Grand Prix being held there. Owing to bad weather and other unavoidable obstacles, the promoters had anything but an easy time, and it is doubtful if these two classics will be run on the Milwaukee course again. Savannah, Ga., until this season was the favorite course—the favorite, that is, since the days when Long Island had its great races. This season, however, Milwaukee was more anxious to secure the two road classics than Savannah. The reason that the cup races have not been held on Long Island since 1910 is because it was proved for several years in succession that it is impossible to control the crowds which attend a cup race in Nassau County. It was in order to avoid accidents due to crowds swarming on the course that racing on Long Island was abandoned.

Santa Monica has the fastest course in this country, the world's road-race record of 78.5 seconds being made by Tetzlaff there in a long road race. It is a beautiful wide circuit and ideal for speed, having four sweeping turns. The sportiest course in the country, however, is the Portola Circuit at Oakland, Cal. Piloting a car on this course requires the greatest driving skill. It is much slower than some others, but a driver to make a showing on it with any sort of car must be a crackajack. The race over the mountains, roads, and deserts between Los Angeles, Cal., and Phœnix, Ariz., a distance of more than 500 miles, is an annual southwestern event. Road races have been held also at Crown Point, Ind.; Lowell, Mass.; Riverhead, L. I., and a few other places.

The Indianapolis Speedway is by far the best motordrome or track in the country for automobile races existing at present, but the new season probably will see the first race on the new two-mile Metropolitan Motor Speedway on the Newark Meadows near New York City. It is planned to make a 500-mile race.

SOME OF THE COURSES

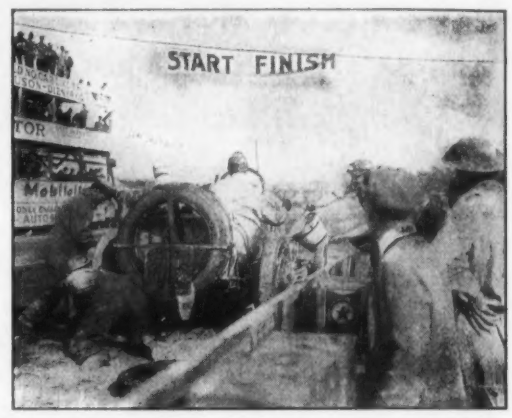
AT LOS ANGELES there is a mile board motordrome. Atlanta, Ga., has a two-mile speedway located at Hapeville, seven miles from the city, but the lack of transportation facilities from the city to the course is a great drawback for this course. There are mile tracks all over the country upon which small meets are held, many of these being ovals which were made famous in the earlier days of horse racing. The mile track at Brighton Beach is different from the average in that its turns are banked with concrete. Last October and November the best mile track sprint races ever seen were held here.

Caleb Bragg rounding a turn in the Grand Prix race at Milwaukee, which he won

Hugh Hughes in driving mask

Whereas the famous Ormond-Daytona course in Florida saw many world's records smashed a few years ago, it has not been used for racing since 1911. Galveston, Texas, and Old Orchard, Maine, hold big meets each year, the Galveston event being the big speed carnival of the Southwest, which draws crowds from all over Texas and adjoining States. Early in 1911 Pablo Beach near Jacksonville, Fla., saw many records broken. The difficulty with making a beach meet pay comes in controlling the crowds and making them buy grandstand seats. Nearly every beach is so arranged that it is difficult to prevent people seeing the show free, and it is quite difficult to give a free show in the form of a race meet and pay running expenses and drivers' prizes.

At the Indianapolis course, which is a 2½-mile oval surfaced with vitrified brick, there have been some great races, including two 500-mile events, one in 1911 and one in 1912. Several other thrilling events have been held here—the Cobe Trophy (formerly held on the road course at Crown Point, Ind.), the G. & J. Trophy, the Wheeler & Shebler Cup, the Prest-O-Lite Trophy, and others. At Indianapolis every precaution for safety is taken. The last couple of years promoters

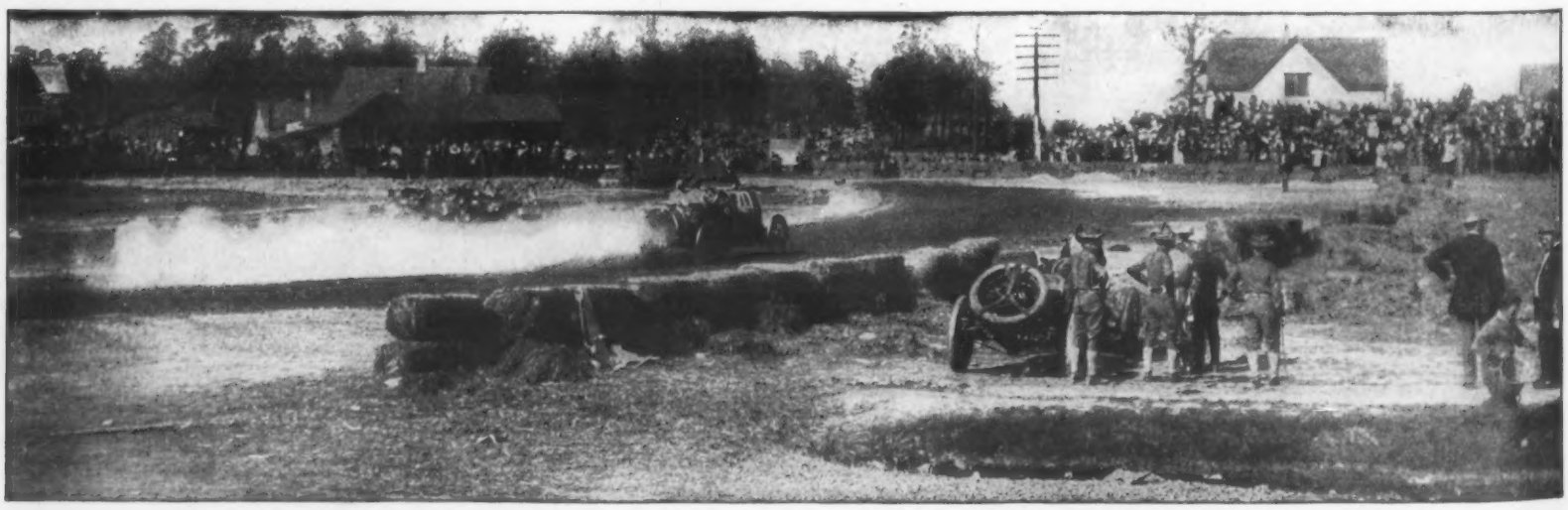


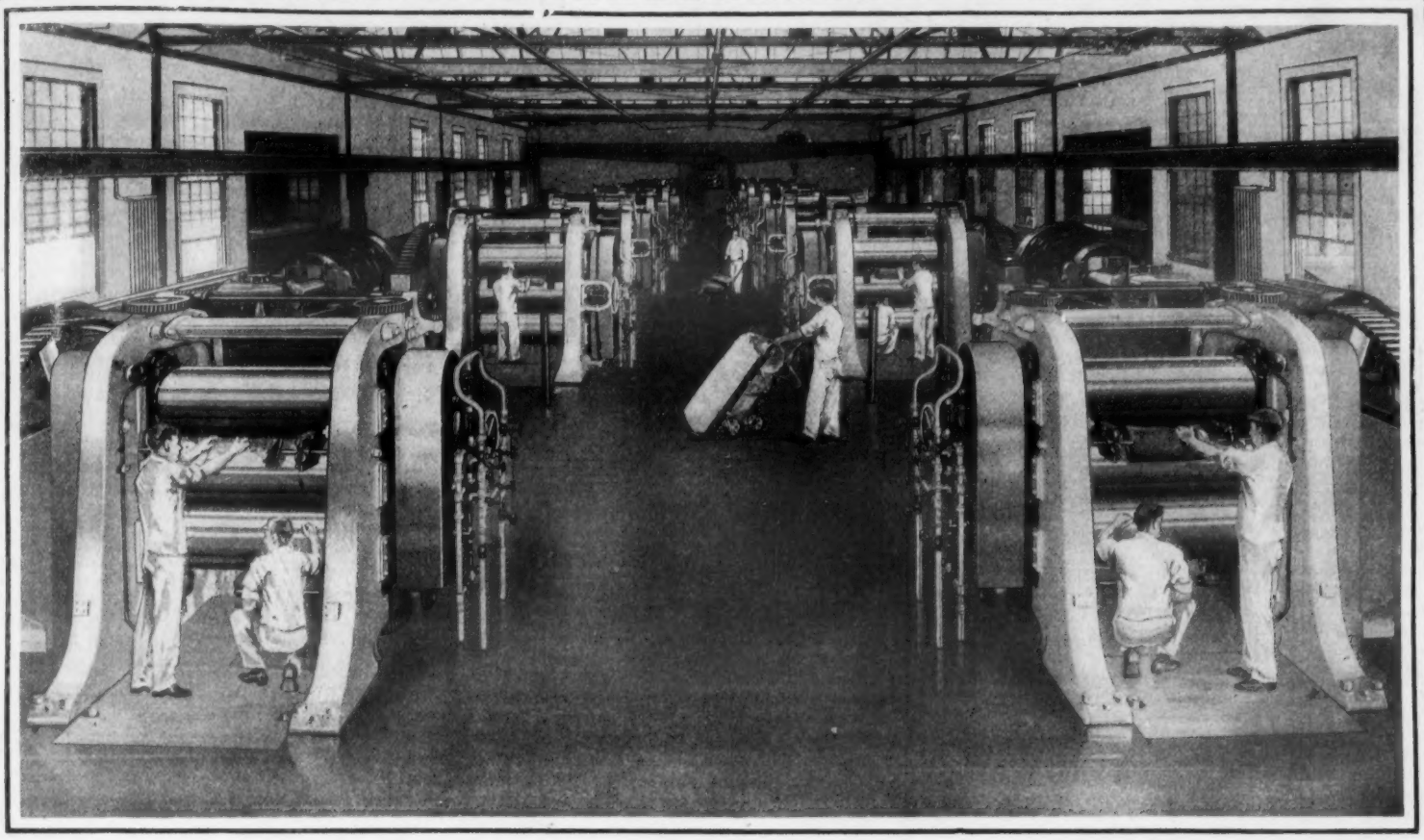
Changing a rear tire on De Palma's car in Vanderbilt Cup race in exactly 28 seconds

have learned much about making a course safe, and in the 500-mile race last May, although there were twenty-six starters and although a number of drivers piloted the entire race without relief, not a single participant or spectator was killed or injured.

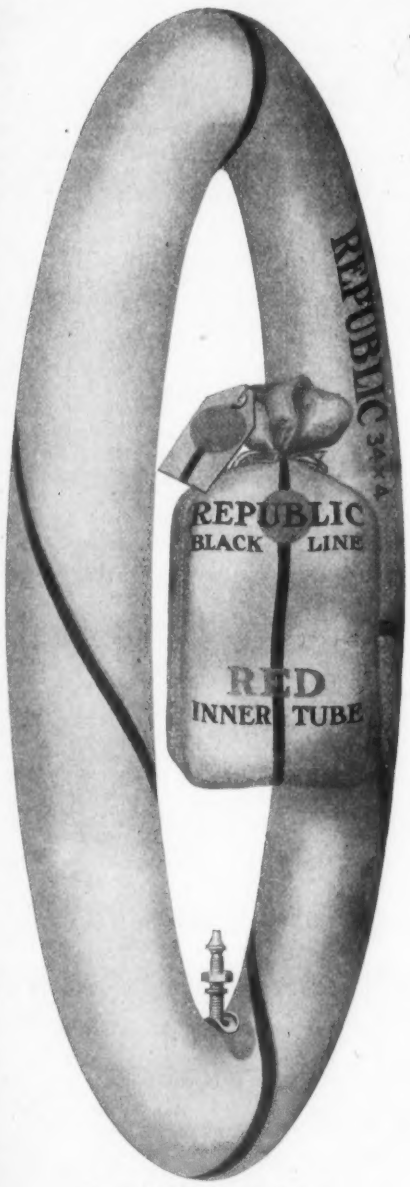
At each of the 500-mile races there have been more than 80,000 spectators, which goes to show how interested the public is in an automobile race. Indianapolis is a comparatively small city with a population of but 233,650. A large proportion of the spectators at these races are Indianapolis people, but thousands journey from Chicago, New York, and other cities to see the contests. Think what a motor speedway near New York City would mean!

Occasionally we hear persons declare that automobile racing is dying out. As a matter of fact it is not. It is true that fewer factories are maintaining racing teams for advertising purposes than was the case some years ago, but it must be borne in mind that there are numerous sportsmen who enter and drive cars in the speed events merely for the fun they derive in this way. Furthermore a number of the newer companies that have yet to make reputations for their products will be seen on the speedways this season. In addition to these there are companies that build fast racing cars which





THIS IS THE REPUBLIC RUBBER COMPANY'S NEW CALENDER ROOM. *Write for free folder; beautifully illustrated in three colors, it describes interestingly the evolution of crude rubber and raw fabric into the finished tire.*



Republic Black-Line Red Inner Tube

Where machines and brains make tire mileage for YOU

Republic Staggard Tread Tires give you the mileage you really ought to get because their foundation is *right.*

The foundation of a tire consists of alternate layers of fabric and rubber. And the efficiency of any tire depends to a great extent upon the manner in which the fabric and rubber are treated and combined.

The illustration above shows the Republic Calender Room—the new "rolling mill" of this rubber plant where foundations for Republic Tires are made.

In this great room man's skill and ingenuity and modern machinery combine to make the *right* foundation for Republic Tires. Scientific, painstaking care is exercised in every operation from testing and drying the fabric to calendering ("rolling") the rubber and combining the two under proper heat and pressure.

And on this *right* foundation is put the Staggard Tread—the tread of double thickness that leaves the full-thickness plain tread after the center studs eventually wear off.

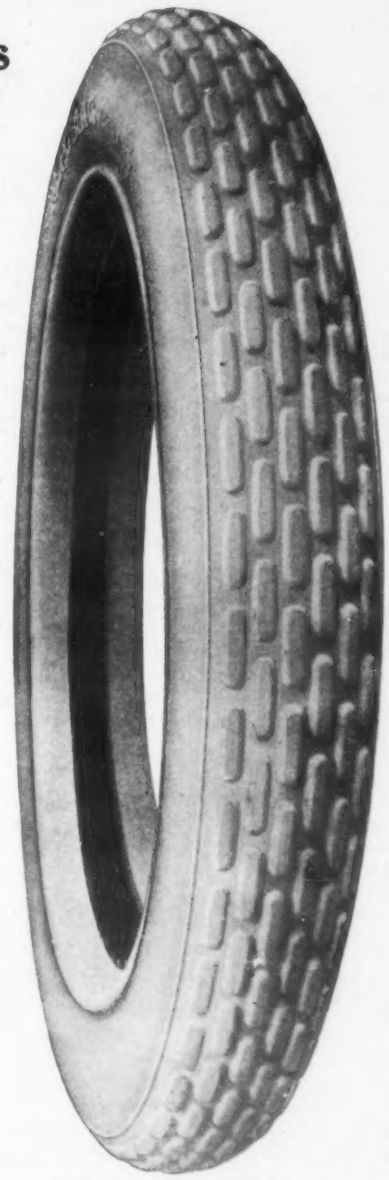
The Staggard Tread is protection against skidding, and really economical because of the double mileage it gives you.

Write today for beautiful folder on this wonderful new Calender Room.

THE REPUBLIC RUBBER COMPANY
YOUNGSTOWN, O.
Branches and Agencies in the Principal Cities

REPUBLIC
STAGGARD
TREAD TIRES

Republic Staggard Tread Pat. Sept. 15-22, 1908



The Original Effective Non-Skid Tire

Another freak driving mask

they sell to customers and which are raced without factory support. Caleb Bragg, for instance, who won the recent Grand Prix race, drives purely for sport, pays the expenses and entry fees on his own cars, and would have remained an amateur driver had not the rules required him to turn professional in order to meet drivers of his own ability. The same applies to Spencer E. Wishart and Erwin Bergdoll, the latter a wealthy young Philadelphian who won the last Fairmount Park road race. Jack Rutherford of Tuxedo Park, Armour Ferguson of Boston, J. Fred Betz III, and reckless Harvey Ringler of Philadelphia, and a few other amateurs are simply "racing bugs" who like the excitement of high speed.

A number of professional drivers guide cars owned by wealthy sportsmen. For example, the car which De Palma has been driving the past season is owned by E. J. Schroeder, who had built and raced the motor boat *Dixie*. E. E. Hewlett of Los Angeles, Cal., owns the cars which Teddy Tetzlaff drives. Tetzlaff is the idol of the Pacific coast, having won the Santa Monica road race twice, also some other big races. At Milwaukee he set the pace in both the Vanderbilt and Grand Prix races, but was unfortunate in having his car meet with mishaps each time. W. H. Bertrand of Dallas, Texas, owns the fast car which George Clark drives. Robert Heitemeyer of Jersey City, Otto Applegate of Eatontown, N. J., Fred Comiskey of New York, J. A. Benedict, F. S. Hodson, and others whom I could name possess cars and engage or permit drivers to race them.

THE PERSONALITIES OF THE DRIVERS

REGARDING the men who drive these cars, many of them have interesting personalities. Possibly I have had more intimate dealings with drivers of racing cars than any other person. As a class they are very decent fellows, although often hard to handle, just like prima donnas. While the majority were not born with silver spoons in their mouths, most of them are not "rough-necks" as one might imagine from seeing them all smeared up with oil and grease at a race course. For the most part they are fairly well-educated men, some having technical and university educations and others being fellows who have worked up from the bottom of the ladder, working in various departments of an automobile factory, developing into road testers, then riding with drivers as mechanicians, and eventually becoming drivers themselves. It is a peculiar thing that practically all drivers sprout gray hair at their temples, after a few races, no matter how young they may be—evidence perhaps of the strain of high speed. Seldom does a regular chauffeur who drives a pleasure car as a regular occupation develop into a racing driver. Few have it in them.

One thing all the real drivers possess in common, and that is *brains*. Racing automobiles does not merely consist of a driver planting his foot on the accelerator pedal and looping down a course "wide open." Contrary to popular opinion, racing cars throughout a contest of any distance are not driven at their top speed. A driver will attempt to get so much speed out of a car and no more, until possibly the last lap, when he may endeavor to get every ounce of energy and speed out of his mount to win.

It is not always the fastest car which wins a race. "Head work" plays a most important part. A driver has to bear in mind that he must drive so as to avoid developing mechanical trouble, must drive turns so as not to skid and wear out his tires, must bear in mind the fact that in every race of any distance he will have to change a certain number of tires, must keep posted on where his competitors are in the race by watching the signals from his pit, and when attempting to pass a competitor must do so at an advantageous point of the course where neither car will be in danger of being ditched or skid into one another if on a curve. It requires a great many elements to combine in the making of a successful driver. Some years ago when sensational foreign drivers came over here, the popular impression was that they were all "crazy" and simply dare-devils who feared no limit of speed. As a matter of fact some of these men, like Vincenzo Lancia, Louis Wagner, Victor Hemery, George Szisz, Felice Nazarro, Henri Fournier, and Emanuel Cedrino, were not crazy dare-devils at all, but used excellent judgment and headwork combined with their daring.

AMERICAN PILOTS SKILLFUL

HOWEVER, I do not believe Europe ever produced a driver of more ability than some of the American boys. When George Robertson drove cars here before his retirement from racing, he showed driving skill equal to any that ever came from abroad. I doubt if there will ever be produced a driver of greater all-round ability than the late David Bruce-Brown. Last season he developed a style of driving which was entirely his own and by long odds the most scientific. His driving position was queer. He would grip the lower half of the steering wheel in such a way that his elbows would be raised quite high and he would bend away over the wheel almost touching it with his chin. The mystery of it all was that he could keep this apparently uncomfortable and straining position throughout a race. When he won the Grand Prize twice and also won the first leg of the last French Grand Prix he demonstrated his superiority over the best of the foreign talent.

Ralph Mulford, who won the 1911 Vanderbilt Cup race and numerous other big events on road and track,

Ralph De Palma, winner of the last Vanderbilt Cup race

is a remarkable pilot, although many people do not realize it on account of his graceful, motionless poise. A feature of his work is his remarkably consistent driving. In a race he will drive lap after lap in approximately the same time, there being but a few seconds difference in his lap times, and I have seen him drive rounds repeatedly in exactly the same period even to a fraction of a second, which proved his excellent judgment in always shutting off for a turn at precisely the same point and taking the turn at the same speed as well as maintaining the average he wished for in the stretches. Incidentally this is not easy, and if you doubt it, try going around a certain course with a touring car some day, attempting to maintain the same lap speed, then find out how much off you are on your laps.

Tetzlaff is a driver of the George Robertson school. His policy is always to slam ahead at top speed, setting

A photograph of Ralph Mulford and his wife taken just after Mulford won the 1911 Vanderbilt Cup race

the pace, trusting to his car standing up and getting so far ahead of and disconcerting his competitors that they cannot catch him. This is just the opposite of the manner in which Mulford, De Palma, Dawson, and a number of others drive. In the last 500-mile race Dawson, who won it, did not have as much speed as a number of the others and was obliged to nurse his car throughout. When De Palma was leading on that 495th mile with more than 8 minutes' advantage and then broke down, Dawson stepped on the throttle of his mount and drove to the finish faster than he had driven at any other period of the contest, winning a most unexpected victory. In that same race De Palma did not set the pace for the first few laps. He waited to ascertain how much speed Tetzlaff, Bruce-Brown, Mulford, Wishart, and others had, and then having taken their measure and noted them stopping for tire changes, proceeded to go out and pass them and break the world's records shortly from the 50th mile until the 495th—records which unfortunately were not awarded to De Palma, because he did not finish the race in accordance with the rules.

At Milwaukee in both the Vanderbilt and Grand Prix events he waited for several of the other fast cars to encounter trouble before making his bid for the lead In other words, instead of slamming ahead and taking a chance on "the glue holding in his car," he nurses the motor and refrains from driving it at its limit until the psychological moment, when he sees he can steal a march on the other fellow during a tire change or owing to one of the other misfortunes of war.

De Palma is as scientific a driver as was ever seen in a contest. He was born in Italy, but has lived in this country since he was seven years old and received his racing education—bicycle, motorcycle, and automobile—on this side of the water. While he probably never will drive again, his work will always be remembered by many followers of racing, the majority of whom consider him the greatest all-round driver.

There are a number of other good professional drivers about whom much could be written. Some of the best have retired, among them Ray Harroun, winner of the 1911 five-hundred-mile race; Harvey Herrick, who has won notable victories on the Pacific coast and held the world's road race record for a while. Then among those still driving are: Howard Wilcox, Len Zengel, Bert Dingley, Charles Merz, Mort Roberts, and Joe Matson. "Hughie" Hughes, who is a Britisher, has had most remarkable success in light-car races the past two seasons, winning nearly every small-car race in which he started.

SOME OF THE AMATEURS

AS FOR the amateur and ex-amateur drivers who drive for fun rather than cash, to my mind Bragg is by far the most remarkable. He is 27 years of age, weighs 127 pounds, is slight and even frail-appearing, and yet he can take terrific punishment from a racing car hitting the bumps. His is a languid, nonchalant sort of a face with an utter absence of any dare-devil look in his mild eyes. While driving at 100 miles an hour he sits in the seat of his 160-horsepower car with much the attitude and abandon of a young man calmly smoking a cigarette, seated on a cushioned chair in a hotel lobby, only Bragg drives minus a cigarette.

Erwin Bergdoll is a slashing, slam-bang sort of a driver, with an inborn love of high speed, and I expect to see him win more big races next season. Young "Eddie" Hearne, Chicago's favorite, who entered the speed game just for fun and then went into the automobile business, has won some very good races, among them the Cincinnati road race in 1911 and his drives on the Indianapolis Speedway upon which he made and still holds the world's 15- and 20-mile records, turning the 15 miles in less than 10½ minutes and the 20 miles in 14 minutes—some going for a 125-pound youngster!

But ignoring the sporting element of racing entirely, if the average owner or prospective owner of a motor car could see the earnest manner in which a factory staff experiments with, builds, and tunes up racing cars to enter big contests—if he or she could note how dozens of carburetors, cam shafts, magnetos, spark plugs, bearings, lubricants, and other parts and accessories are tried out in chassis for months, for the purpose of obtaining comparative data on the respective merits of each, a more intelligent idea of what racing has done for the improvement of automobiles would be obtained. Could the private owner note how the designer and chief engineer spend hours evolving and trying out some feature of construction intended to make a part stronger, lighter, or more efficient—something which can be incorporated in regular stock cars put out the following season—the value of racing would be most potently illustrated.

Automobile racing will continue to exist for years to come. Under the circumstances, the best plan is to endeavor to control and take precautions to make it safer rather than to attempt to eliminate it altogether.

The Fond du Lac turn on the Milwaukee course where a novice driver skidded into baled straw

Our Highways and the Motor Car

Cooperation among Automobil... Will Aid Good Roads Commissioners in Their Efforts

...OGAN WALL... PAGE

WHAT about a macadam road long enough to encircle the globe at the equator? This would seem a lavish and prodigious undertaking, yet enough was expended on the roads of the United States last year to accomplish such a feat. Our outlay for roads in 1911 exceeded $140,000,000, or about one million a day for the road workin... season, a sum sufficient to girdle the globe with a ... adam road at an average cost of about $6,000 ...

Better still, however, would be a rea... dream of many enthusiastic road advocat... tem of trunk lines running north, south ... This sounds like a dream, to be sure, bu... possible. In fact, last year's road outlay ... that purpose, would be sufficient t... roads east and west ac...

The growth and magnitude of the automobile industry may be shown by the fact that the capital invested in this branch of our manufactories had increased from $23,084,000 in 1904 to $173,800,000 in 1909, o... an increase of 652 per cent during the five-year peri... The relation of this industry to labor may be sh... by the fact that in 1904 it afforded employment ... 13,230 officers and employees, while in 1909 this n... had increased to 84,954, or 541 per cent. A rem... growth has also taken place in the value of t... products, which was only $4,748,000 in 1899, ... increased to $194,722,600 in 1909, or 4,00... Equally marvelous has been the increase in ... of machines, the number produced being ... 22,830 in 1904, and 127,289 in 1909; show... from 1899 to 1909 of 3,31... per cent. In ... there were 440,... autos in use in the U...

The Pers... Interest

THE ... in the ... ure and ... it ... way a powerf... better highway ...

...ating a Wreck

THE car ... discussion had been burn... ignition while on the ... ground ... tank ... in the ...timation of ...

...main traveled auto roads in condition by removing ...s and taking out many of the bad turns."

...he racing motorist upon the public highway has ... much to breed prejudice against the automobile ...d its owner, and to retard road improvement. In ...any rural sections this prejudice is so violent that ...otests have been made against improving the high... ...ys, because it was feared they would be used by ...utomobilists as a race track for reckless driving with... ...out regard to the rights of those traveling by the ordi... ...ary means of conveyance ... the motorists would bear ... recognize that the horse... ...greatest user of our highways, ..., and much good result to the ...

...sposition on the part of motorists ...oad officials. This has resulted in ...injustice at times. By the exer... ...egard a much more friendly ...ice ...od. Wholesome criticism is a ...ring a criticism exceeding ...ertain that it is warranted. ...of motorists to produce a ...t is necessary that they co... ...keynote of success in this ... automobile asso... ...each other and with all ...ng for highway improvement. ...of cooperation we will have the ...ous individuals and organizations ...n the same end, but by diverse and often ... methods. The situation should be ad... that all associations may work together.

...ed upon excellent authority ...t to-day the ...s of France carry one and ...e-third times ...e railroads of that ...untry. Much ...sport... ...ks, which ...cient ... ...mercial ... that its cost per t... ...ached ... ...re, prac... ...sts ...ic railw...s. Th... ...ese ...ntly made ... ...00 to ...ning ...le ...ed

...ans-
...of
...hil-
...119
...ec-
...ion
...;
...iver-
...icate
...truck
...without
...e auto-
...of the
...iderable
...n their
...culti-
...thus
... Not
...nce be-
...mer
...he
...too
...pos-
... and
...p and
...y citi-
...to the
...ment of

...plonies,
...er fair
...wn. In
...lliams-
...ment
...to
...ow
...nan
...ond
...ons-
...nd in
...tele-
...war.
...nse,
...ch is
...trav-
...Val-
...istol,
...prac-
...Chat-
...Alle-

The Car that has Revolutionized the Standard of Automobile Values

Get the extraordinary features of this big masterful car firmly fixed in your mind and you will have an entirely new conception of automobile values.

Never before have you seen a car costing less than two thousand dollars with the character and beauty and quality of this 1913 Cutting.

120-inch Wheelbase
Self-starter
Electric Lighting
Nickel Trimmings
Special Cushions
10-inch Upholstery
36 by 4-inch Tires
Fully Equipped
Full forty horsepower

Cutting MOTOR CARS

B-40—Five passenger touring car, 40 h. p. unit powerplant, fully equipped —$1475

A-40—Two passenger roadster, 40 h. p. unit powerplant, fully equipped —$1475

These are the specifications—but they tell only half the story—

The real Cutting supremacy lies in the organization back of the car—the organization that builds character and quality and integrity into every detail of engineering and construction—

The Cutting car has the lines and the dimensions of a high priced car—it has the finish and the upholstery of cars costing twice as much—it has the power plant, the operating mechanism and the equipment that you have been taught to expect only on cars of double its cost—or more—

It is a car that you can't possibly appreciate fully without an actual demonstration.

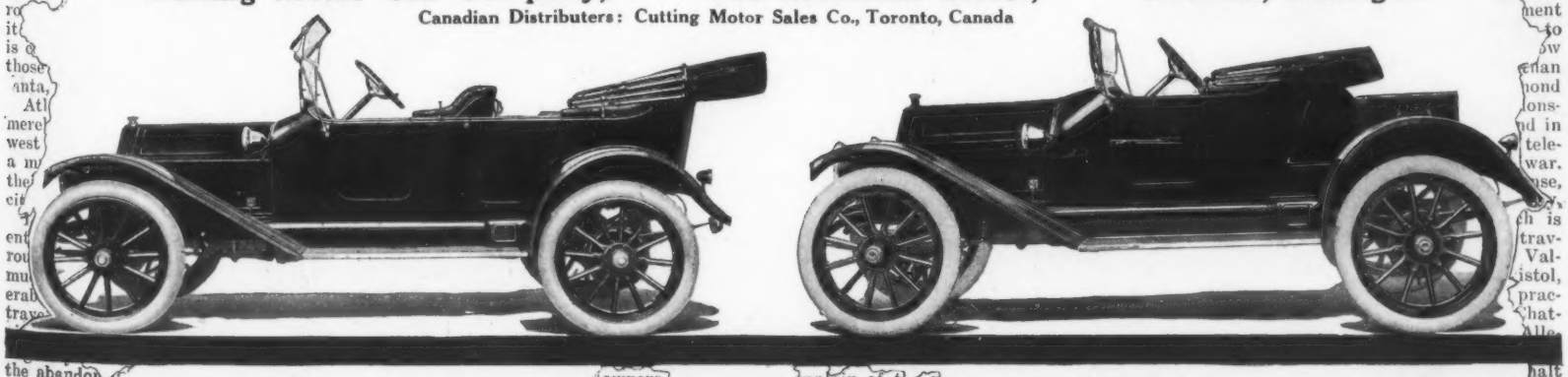
Let us send you the catalog and arrange a demonstration for you through our local representative.

New York Show—Grand Central Palace, Space 19 *Chicago Show—The Armory, Space E-4*

See our new "Six" at the New York and Chicago shows

Cutting Motor Car Company, 313 Mechanic Street, Jackson, Michigan

Canadian Distributers: Cutting Motor Sales Co., Toronto, Canada



...owners ...ans make. ...w machines of the ...ear-old models seem ... can be made to soften their tone, and in many instances become actually genteel in their vocalization if the soot ...mplain of the h... comparison to th... ...t output, the two and ...

...aving, ou... ...of its altitudes ... ...nd ... ...housa... ...et, giving magnificent views of the surrounding country, particularly the region made famous by Daniel Boone and his pioneers.

...halt
...Some

...the abandon... is composed o... has many low po... ...at ... ...reet... a time. Those who brave this route invariably take to the fields. The roads connecting Emporia, Roanoke Rapids, Littleton, Warrenton, and Henderson have stretches of

In the Colorado Rockies

Pioneer trails through the Rocky Mountains are being opened anew to the world by the motor car, and wonderfully has Nature rewarded those who have sought her out in these environments of pine-clad peaks and rugged valleys. The scene in the photograph is that of Eagle River Valley, on the descent into Redcliff

Champion Priming Plugs

Start Any Motor On First Quarter Turn

Champion Priming Plugs end winter starting troubles absolutely. They start the motor of any car on the first quarter turn because they create a rich mixture right at the plug's firing points—ready for a hot, fat Champion spark. They are winter necessities and a source of all-the-year-round satisfaction for every motorist.

The best of gasoline won't vaporize in a cold cylinder in raw, wintry weather.

So no matter how good your spark, it can't reach down to the gas. Some form of priming—*at the plug's base*—is imperative.

Champion Priming Plugs deliver the few drops required just where they are needed.

Champion Priming Plugs save cost of towing and help from a garage. Your car is always ready to *go*—in any weather.

With present low test gasoline, you can't ignore the prime-r problem.

Don't wait for another cold day to prove that you must have **Champion Priming Plugs.**

We guarantee your entire satisfaction, both as to their efficiency and workmanship—or your money back.

Open needle valve slightly (you needn't remove glove) and inject gasoline. Passing through its own channel to plug base, it vaporizes directly at spark points. Explosion will result every time on first quarter turn of starting crank, regardless of cold or weather.

Champion Spark Plugs are regular equipment of 60% of American cars today, including the product of such great concerns as the Ford and Overland.

Millions of them in use prove Champion superiority in workmanship and design.

Now comes the **Champion Priming Plug,** which adds to the perfect spark plug a perfect priming device—needed by every car owner.

They are indispensable to the winter use of cars that have not priming cups. They cost so little that even if your car has priming cups, you will prefer the Champion way; *it never fails.*

Champion Priming Plugs carry with them the prestige that years have given our factory—the largest in the world devoted to spark plugs.

Champion Priming Plugs are sold through auto supply dealers at $1.25, or $5 per set of four. Pay no more.

If your dealer is not ready to supply you with **Champion Priming Plugs,** don't delay; send us the coupon below, properly filled out, and attach to it bank draft, P. O. or express money order, or your check for $5, and we will send you a set of four **Champion Priming Plugs,** prepaid, on the day your order is received.

Champion Spark Plug Co.

101 Avondale Ave., Toledo, Ohio

CHAMPION
TRADE-MARK

CHAMPION SPARK PLUG CO., Toledo, Ohio
Gentlemen: Herewith find $5 remittance, for which send me four Champion Priming Plugs prepaid.
My car is a..... of the year.....
Name.....
Street.....
City.....
State.....
Dealer's Name.....
101

"PETE"

By
GEORGE FITCH
Illustrated by Peter Newell

ONE warm day late in the spring two years ago I was walking down the street from my home with an interior stuffed and distended with dissatisfaction. Friends rushed by in new cars and waved cheerfully at me. Families sailed by in old cars, happy and foot-loose. Rich men tore long, jagged holes in the atmosphere in their portable volcanoes, and contented workingmen chugged along in cars which they had made themselves out of binder wheels and garden hose and twine. The whole world was on wheels—excepting myself. I was turning this bitter thought over and over and getting more inclined to move to Mars every minute, when I passed a man who was beating an automobile by the roadside with a monkey wrench.

I call it an automobile merely from politeness. Persons skilled in machinery could readily see that it had once been an automobile, but the layman would never have suspected it. It was such a weary, decrepit, dirty, ill-kept, downtrodden little brute that my heart went out with pity to it. Its top was old and ragged. Its lamps were broken. Its paint was gone. Its hood was bent in a dozen places. Two tires were disintegrating. Everywhere it had been repaired with wire. For less than two years it had served its brutal master—I knew him and remembered when he bought it—and he had used it up almost as badly as old Simon Legree used up Uncle Tom. It was pitiful. The little car was exhausted, racked, almost unable to stand. Yet I knew that as soon as its owner had finished beating it he would drive it full speed down the hard stone pavement again and maybe run it into a hitching post, as I had seen him do the fall before. As I watched him, my great idea came to me. I would buy this little car.

IT WAS a desperate idea, but I was a desperate man. I was tired of seeing second-hand delight and breathing second-hand fumes. For years my bank account had been engaged in a stern chase with the price of automobiles, with the latter always hull down ahead. Every time I had saved $100, the price of good cars had gone up $250. On that day I had $400 in the bank. It might buy this little ruin and kindly treatment might restore the car to health. If I couldn't run it I could at least carry the starting plug around and pose as a car owner among strangers.

I tried to resist my idea. But I couldn't. It had me by the throat. Before I knew what I was doing I had asked the man if he wanted to sell his car.

"Sell this conglomeration of revolving junk!" said he somewhat wildly. "Say, if I found anyone who wanted to buy this madhouse masterpiece, this movable ruin, this four-thousand-degree-in-the-shade parody on a rheumatic garbage wagon, I'd knock him down before he could change his mind.'

"What will you take for it?" I asked, breathing hard and clutching my check book. "Will you sell it for $300?" I asked nervously.

"Three hund-" said the owner. Then he stopped. He seemed to be fighting for breath. "You—say, are you offering me three hundred dollars for this car?"

I blushed all over. But I really hadn't tried to cheat him. He had a perfect right to refuse it. "I'll give you $400 and not a cent more," I said with dignity.

HE LOOKED at me for a minute with a far-away look, like a man who is fighting a great battle with himself. I saw then that he loved the little car and I felt sorry for him. But he did not deserve to own it and I refused to weaken. I hauled out my check book.

"I'll let you have it," he finally said in a smothered voice. "If I didn't take your money, somebody else would."

"I've got to examine it first," I said in a businesslike manner.

"Go ahead," said the owner dejectedly. I walked around the car four or five times, looking at it intensely. I counted the wheels. I got into it and grasped the steering wheel. It turned like a regular wheel. I felt of the tires and twiddled the crank handle. Then having exhausted my knowledge of automobiles, I said I was satisfied, and bought the car. The owner bullied it into starting and drove me home, instructing me profusely in its disposition all the way. I gave him a check. He gave me a receipt and went away, leaving me a little bit dazed. He seemed a little bit dazed too.

I was an automobile owner. Considering what I had bought, this statement seemed presumptuous, but I was stubborn about it. Practically I was an extensive fool who had spent his savings for a mechanical invalid. But technically I was an automobile owner and entitled to wear the grimy palm and the greasy trousers of the craft. And as I looked at the mob of passing cars I swelled up out of a mere sidewalk user into a capitalist, a quarry of the police and a member of the gasoline gang. It was great. I was getting my money's worth already.

AFTER supper I went out to my car, set the levers as I had been instructed, and cranked a while. I didn't really expect it to go, so I wasn't disappointed when it didn't. I knew it would start for anyone who knew anything about cars. But I couldn't learn enough to start it in several days and I realized that it was going to block traffic a good deal, standing where it was. So I called up my brother who lived in the other end of town and told him I had something interesting to show him.

My brother is younger than I. In fact I brought him up myself, by hand and foot, very carefully. But he knows more about automobiles than I do about anything. He was brought up on automobiles. He has driven them, sold them, and has helped make them. He diagnoses sick automobiles as they pass in the street and he can tell by looking into the radiator of a car what is the matter with its hind axle. He could not afford a machine of his own and the idea occurred to me that he might like to drive mine. I would do anything for my brother. I love him dearly. It did me good to think of the pleasure he was going to have.

When my brother arrived, I led him out to my car. He looked at it a long while, walking around it and inspecting it very carefully. He was so deliberate it made me impatient.

"Well," I snapped, "how do you like it?"

When I said that my brother gave a loud cry and fell over backward. He acted very queerly the rest of the evening

My brother was peering into the thorax of the car, but he emerged as I spoke and rubbed his head with a puzzled air.

"I don't see where the cobs come out," he said.

When I had finished telling him that it was an automobile and not a corn sheller, he was greatly interested and looked it all over again. When I told him he could run it if he wanted to, he was much pleased. He took off his coat and borrowed an old pair of trousers from me and inside of ten minutes we were riding around the streets, while I watched every move he made with hawklike eagerness. I didn't care to run it any more, I said; I'd been out all afternoon and it was a pleasure to see him handle the car. It was just a little trick anyway that I had picked up for amusement. I had only paid $400 for it.

When I said that, my brother gave a loud cry and fell over backward. If I hadn't grabbed the steering wheel we would have been dashed to pieces against the curb. He acted very queerly the rest of the evening, asking me repeatedly if I felt all right and if my head pained me. He even asked me if I thought $350 would be too much for him to pay for a picturesque old lawn mower which was for sale near his home. And he seemed relieved when I asked him if he was crazy.

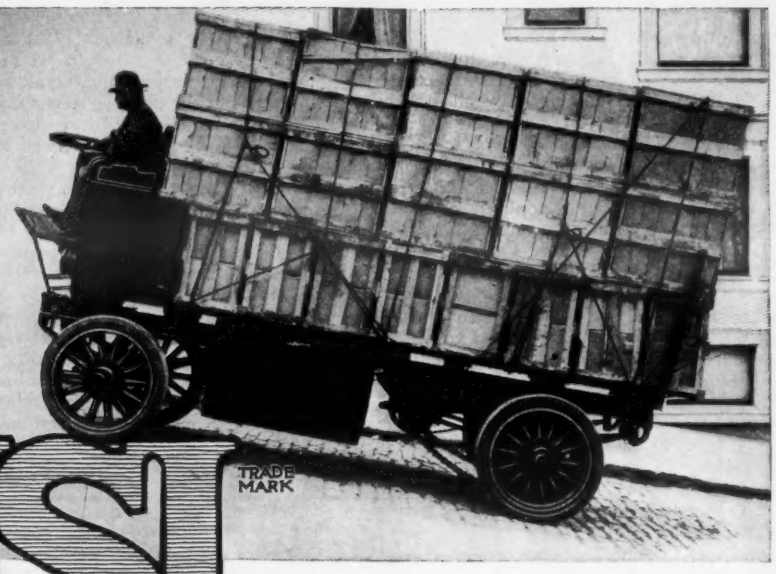
The next day I started the car myself and ran it around the town with all my might, full of weird, jumpy bliss. I don't mean the car ran with all its might. I supplied the might. I killed the car whenever I throttled it down and cranked it about once a block. It limped and stuttered, gurgled, howled and squeaked. Its front wheels obeyed the steering wheel about as closely as a fox terrier sticks to his mistress on the street. The clutch only worked occasionally. The whole concern was one vast asthmatic rattle. But I didn't care. It ran, and more than a hundred people remarked on the fact with pleased surprise. That night I asked the garage keeper, who was a friend of mine, if he could put the car in good order that evening. He was an honest man, and when we had finished discussing the subject I had a lot of new knowledge. At 60 cents an hour it would cost about $175 to put my automobile in first-class shape. In the meantime its diseases were acute. A little more running and it would break permanently in a dozen places. I went home full of gloomy perplexity.

Of course I might, by enrolling in a correspondence course, learn auto repairing in 1,897 lessons and rebuild my car myself. But it would take a year, and besides I distrusted my ability. I had already ruined two meat grinders and a baby buggy that spring while repairing them. I might wait and save the money. But that would take all summer. I might—and then the only logical solution struck me with a bang. It was a wonder I hadn't thought of it before. I would lend the car to my brother.

IT WAS as simple as wishing the job done. I waited several days and then called Bob up. When I offered to lend him the car for a week he wouldn't hear of it at first. But I was firm. We always divided things up in our family, I reminded him. I had had a week's use of the car and I couldn't enjoy it unless he got some fun out of it too. It would absolutely ruin my pleasure unless he ran it awhile. So when he found I was really in earnest he accepted thankfully. The next day I ran the car over to my brother's house and left it.

USL USL USL USL

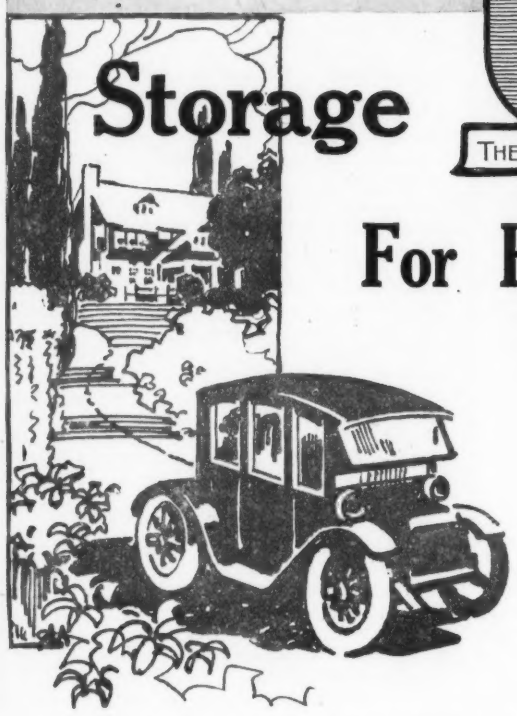
To Every Truck or Pleasure Car Owner



USL Storage Battery

THE UNITED STATES LIGHT AND HEATING CO.

For High Voltage Dependability



PITTSBURGH is known as one of the hardest communities in the country on electric vehicles. Two or three years ago transportation by this means was regarded as impracticable in that city on account of the hills and general traffic difficulties.

The people had to be shown. The **U-S-L** Storage Battery did it. By its remarkable power maintenance and high voltage dependability it proved to Pittsburgh that, with the right battery, electric transportation is the economical, reliable and clean method for either commercial or pleasure uses.

The result was that last year hundreds of electric vehicles were sold in the Smoky City and 75% of them were equipped with **U-S-L** Batteries. In spite of the number and steepness of the hills and rough streets, these batteries are giving 65 to 70 miles on a charge, with far longer life than the ordinary battery gives under such conditions. Users consider that the **U-S-L** Battery is about 25% more efficient than any other battery on the market.

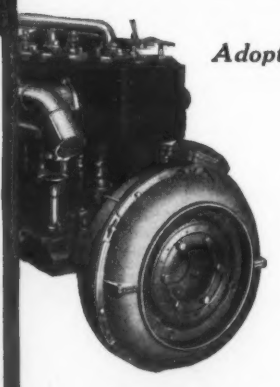
This Pittsburgh story is one of the greatest reasons in the world why you should specify that your electric truck or pleasure car be equipped with **U-S-L** Batteries. On all renewals get **U-S-L** plates. A battery that makes good on hills makes good on the level.

U-S-L Service stands back of every installation, bringing the services of trained experts, who co-operate with users to secure maximum efficiency. These men operate from stations in eight principal cities, where spare parts are always on hand.

U-S-L Electric Starter & Lighter — For Gasoline Automobiles

Takes the Place of the Fly Wheel

Adopted by the Overland, Rambler, Bergdoll, Garford "New Six," Moyer, Edwards-Knight, etc.



This illustration shows how the **U-S-L** Electric Starter and Lighter is substituted for the fly wheel of the automobile engine.

A starting and lighting device that is installed in place of the usual engine fly wheel, filling perfectly the latter's function as a balance wheel, yet making it a powerful motor starter and efficient current generator as well. Thus the **U-S-L** becomes an integral part of the engine; not an extra moving part is added to the car. No extra weight is introduced; moreover, it keeps the weight *central*, while the usual practice is not only to increase weight but add it to the side or one end of the car.

There are no chains, sprockets, gears nor belts, and no bearings to be oiled. It turns the engine over from 150 to 400 revolutions per minute. Simply a touch of the foot button is necessary; the motor starts with a smooth, gradual, continuous torque, without noise, jerk or jar.

The **U-S-L** is also a complete lighting plant for the automobile, furnishing practically unlimited electrical current for lamps, even for display signs on commercial vehicles. It does away with lighting batteries or an electric generator of the ordinary type.

It is entirely automatic both as to starting and recharging; no attention is necessary beyond occasionally adding distilled water to the storage battery. No complications; extremes of heat and cold will not interfere with its operation.

Send for descriptive Literature—FILL OUT THE COUPON

The U.S. Light & Heating Company

General Offices: **30 Church Street, New York** ***Factory:*** **Niagara Falls, New York**

Branch Offices and Service Stations:

Chicago New York Boston Cleveland Buffalo San Francisco Detroit St. Louis

USL USL USL

The United States Light & Heating Company C. W. 1-11-13
30 Church Street, New York, N. Y.

Gentlemen—Please send me the U-S-L Bulletins checked below:

- ☐ 1. **U-S-L Electric Starter and Lighter for Automobiles.**
- ☐ 2. Power for Electric Vehicles—Pleasure and Commercial.
- ☐ 3. Electric Light for Railroad Cars.
- ☐ 4. U-S-L Storage Batteries for Stationary Service.
- ☐ 5. U-S-L Storage Batteries for Independent Electric Lighting.

(NOTE—With the bulletins will go forward the U-S-L Book illustrating and describing the U-S-L facilities, service and products.)

Name .....

Street .....

City ..... State.....

Then I left town for a week. I had to go away about that time anyway, and I didn't want my brother to worry for fear I was at home pining for my car.

I traveled a good deal that week, and travel was never so pleasant before. I found that by alluding casually to my "car" in the opening sentence of a conversation I could not only win the respect of those who didn't have cars, but the intimate friendship of those that did. I found also that I could talk as grandly about my $400 car as if it cost $5,000 and was my ninth offense. I made a lot of friends on the strength of it and scarcely set foot on a sidewalk all week.

I WAS all anxiety to hear about my car when I returned, and called up my brother at once. I said "hello" to him and inquired about the auto's health in the same breath.

"Oh, the car's all right," said my brother, "and I am too, in case you might be interested."

"Have you enjoyed the car?" I asked hospitably.

"Yes," said my brother; "it's been like old times; only I wish you hadn't come back until to-morrow."

"Why?" I asked.

"Well, you see, I found a little work to be done on it and I've been fixing it up. I haven't had a chance to run it yet."

And do you know, that nervy brother actually wanted me to wait a day longer while he drove my new car all around the country. That's the brother of it for you.

WHEN I saw my car a few minutes later I hardly knew it. My brother had done it a lot of good. He had spent the entire week, I found, under it, on top of it and coiled around it in the way auto mechanics have. He had revamped the engine, edited and revised the magneto, mitigated the exhaust, reformed the clutch, resuscitated the carburetor, manicured the tires, cleaned the car from end to end, and polished the brass work. And when I took the steering wheel and opened up the throttle I found a thing of life under me, fighting for more speed, and purring like a half-ton pussy cat. It was magnificent. It must be a wonderful pleasure to work on a car and bring it up from a ruin to a spirited young thing which has to have mud on its number plate in order to avoid the law. It made me feel good to think how much my brother must have enjoyed himself. But I was always doing things for him.

That was the beginning of a summer full of joy. I have heard of sick tigers who, when cured by foolhardy physicians, have become the slaves of their rescuers. My little car seemed almost alive in its anxiety to repay me. It ran, day and night, with eagerness. It staggered pluckily over rough roads, dug its way out of sand patches, and buzzed cheerfully along through rain and mud. No burden was too great for it. Although built for three, it would carry six, and go at the Main Street hill as sturdily and confidently as if it was carrying one, laboring faithfully up on the high gear and performing such herculean efforts before it stopped with a gasp and waited apologetically for me to kick in the low-speed pedal, that I began to think of it as a human being, and to regard it with affection. In a month I had stopped calling it "here you" and had given it a name, a gender, and a place in the family circle.

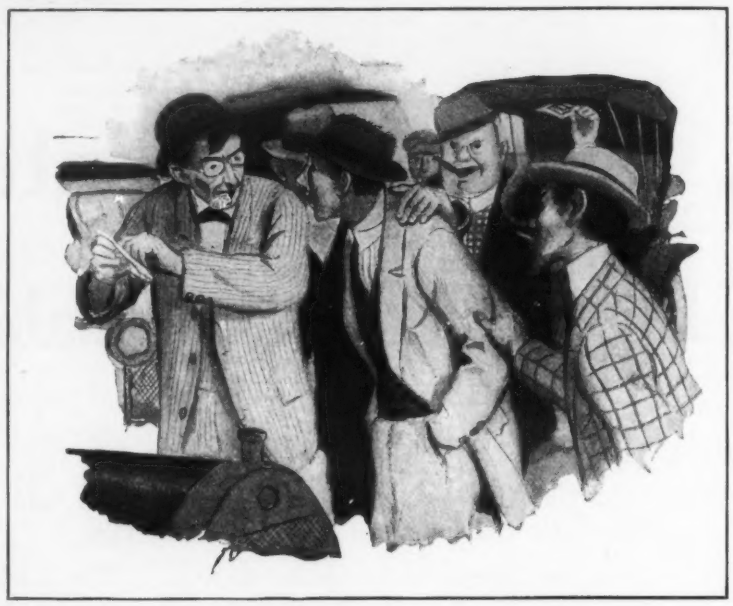
"Pete" he was after that, and from that time on the doings of Pete during the day were the main subject of conversation at the table at night; and the state of his health on Sundays was a subject transcending all others in importance.

Pete was our friend and companion. Pete carried us out into the country on picnics and over the river into the hills on exploring tours. Pete took us to the far end of the town to spend the evening and waited patiently for us to reappear. Pete stood placidly while my two little daughters swarmed over his seats and yanked at his levers.

HE USURPED the place of dolls and dogs for them. They loved him because he was a little car, as children love everything little. They guarded him from the bad boys who tried to "honk-honk" him. They cluttered around, all anxiety, while I fussed with his internals, and pitied "poor sick Petey." They threw themselves at him with shouts of joy whenever I went out and cranked him. A hundred times that summer my three-year-old princess put her arms around my neck and said: "Oh, papa, let's get Petey and take a little ride."

Of course I don't mean to say that we didn't have troubles. It seemed to me that Pete was continually disintegrating somewhere. As he convalesced in his differential, he declined in his radiator. When he retained water in his radiator he was generally enjoying paralysis of the oiling system. And when he oiled perfectly, his cranks as a rule were working loose once more. He also rattled in twenty places and his valve mechanism was as noisy as a small thresher. But strangely enough, this didn't worry me. I found very early a vast difference between the owner of a second-hand car and the proud mahout of a next year's model. The latter is worried and depressed when any little thing is going wrong. The former is jubilant and happy when any little thing is going right. So long as Pete ran and came home on demand, I was happy. That summer and fall I coaxed, chevied and badgered him over 2,500 miles of road, leaving behind me a trail of bolts, parts, discarded accessories, and small tools, by which even a detective could have tracked me.

Not only did Pete serve me and my family all that summer, but he helped make my brother happy. Regularly on Sunday afternoons we would load up and drive over to his house, where my children would frolic with his children, and he and I would walk solemnly around the car 700 times discussing it in that intimate and personal manner which experts and owners use. There are more things to talk about in an automobile than there are in politics. During that summer we talked Pete over carefully from the extreme rear edge of his off hind tire, which generally needed vulcanizing, to the tips of his headlights, which always needed cleaning. And the talks always ended the same way. Bob would go down cellar, put on his war togs, and come out with a bushel of tools. Then he would pry into the dank, greasy gizzard of the car and enjoy himself while I stood by and encouraged him. These little talks did Pete a world of good. He was always the better for them. Owners who run cars all year round and neglect to talk them over regularly with some kind, sympathetic friend who has a knowledge of ignition do them a great injustice.



An army of automobile agents descended upon me like Assyrians surrounding a lamb, or wolves attacking the Israelites

SOMETIMES Pete developed so many things to talk about during the week that I could not wait until Sunday. Then I would drive him over and lend him to Bob for several days at a time, during which time Pete improved steadily. It was beautiful to see them together. Some people are stingy with their automobiles, but I was never that way.

When the cold weather came I put Pete away in a barn for the winter, and in the spring an army of automobile agents descended upon me like Assyrians surrounding a lamb, or wolves attacking the Israelites —I don't remember which is historically correct. They brought with them samples of all the cars made in America and points east. They offered me fabulous sums in trade for Pete. For weeks I rode about in cars which were mechanically so perfect that getting power and speed was as simple a proposition as turning on molasses from a spigot.

It had been a fortunate winter for me and I had enough money in the bank to sell Pete down the river and buy a dream of a little touring car which started with a button and would run until election day with no care whatever, except providing new speedometers as fast as the old ones wore out.

BUT strangely enough, I couldn't get interested. The perfect cars left me cold. In a perfect car I was only a motorneer. The car supplied the brains and left me only the steering to do. Beyond mending a tire occasionally I couldn't look forward to a single bit of excitement.

I couldn't even go over and visit my brother. There would be nothing to talk about. And if I loaned him the new car all he could do would be to run it around and wear out the tires. Brotherly affection is strong, but there are limits to it.

As I thought these things over I began to realize that I loved Pete. He was more than recreation to me. He was excitement, suspense, uncertainty, triumph, and a baffling mystery which I was working out bit by bit. He had a personality. He had traits and weaknesses and also strength of character. There wasn't a part of him which was a stranger to me. When he ran he was a chorus of sweet sounds and rackets. When he stood still he was a challenge twenty times as interesting as a golf course.

So I scorned the automobile agents and kept Pete. I kept him as a companion, not as a personal street car. And he rewarded me by struggling pluckily through his fourth year of existence with great success. He took me to town every day and took some friend home with me at night, said friend always causing me to swell with pride by marveling at the way the little brute clawed up the Main Street hill. He took me to Chicago and back without a breakdown, gasping home the last few miles with a rheumatic magneto, while I patted him and gloried in his spunk. Once he hauled for ten miles the disabled six-cylinder car of a man who had often alluded to him with scorn as a "prehistoric bang-buggy." Twenty times he took me through the country, and brought me home again—breaking down quietly in his garage half a dozen times after his day's work was done.

I HAVE grown proud of Pete as well as fond of him. Hundreds of people have said to me: "Well, you certainly have gotten a lot of use out of that little mess."

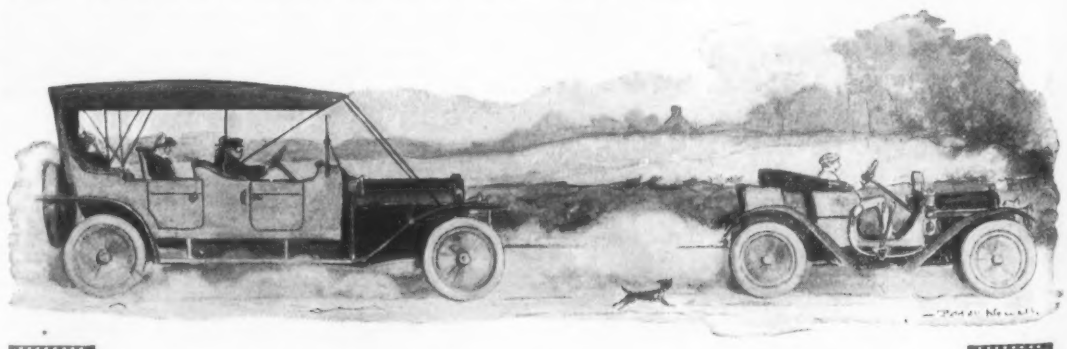
How many owners of good cars get the same compliments? I am so proud of him that I even refuse to paint him, and his upholstery is a disgrace. I wish he was six years old instead of four. I glory in his age, as a son glories in his 75-year-old golf-playing father.

I have decided to keep Pete forever, replacing him as he wears out. This year he has had a new magneto, carburetor, front wheel and oiling system. Next year he must have a new radiator and his gears are worn razor sharp. In another year I must get a new engine.

It will be expensive, but I will get my money's worth. I will still have Pete. I will have him until sometime in the distant future his steering wheel will wear in two and his crank handle will disintegrate. Then I will replace them and suddenly find that after all I haven't got Pete.

He will have vanished, bit by bit—just as I myself have vanished in the last seven years and am a new person, using the old name and signing checks on the bank account of my former self.

Perhaps when that day comes I may lose interest in Pete and sell him to a museum. But I shall not borrow trouble.



Once he hauled for ten miles the disabled six-cylinder car of a man who had often alluded to him with scorn as a "prehistoric bang-buggy"

Now Europe, Too

The Michigan "40" Wins World-Wide Acceptance as Leader of Its Class

This year, with 72 makers competing on "40's," we claim the laurels in this mammoth field.

Our American allotment was taken by dealers before the first 1913 model was shipped. They came by the hundreds—these men who know all cars—and took all we could promise for 1913.

Then Europe Came

Then came experts from Europe—artists in cars; men who must compete with the finest cars in the world.

They came from England, Scotland, France, Russia, Germany. And they too agreed that the Michigan this year leads the medium-priced "40's" on both sides the Atlantic.

Some of the world's leading dealers, including the German Packard Motor Car Co., took our agencies abroad.

Their Radical Tests

These experts and dealers, some of whose orders approach $1,000,000, don't make mistakes on cars.

Their tests are searching and extreme. Their judgments, by most men, are regarded as final.

Hundreds of these men have pronounced the Michigan right. Some, like our Chinese distributor, devoted weeks to the tests. Some have spent years in testing previous Michigans.

And these men have agreed that no other Forty begins to give the Michigan value.

You'll Also Agree

When you come to compare you will also agree. Competent men cannot differ on this point.

Here is a car built by W. H. Cameron, known by 100,000 successful cars. Here is a body by John A. Campbell, who has designed for kings.

Able men have spent four years on this car. They have worked out in it 300 improvements. They have put 5,000 cars into actual use, to prove out their ideas.

They have given it 50 per cent over-capacity. They are using oversize tires, and springs, and brakes. They give it 14-inch cushions, electric lights, a 22-coated body.

Here is the last word in beauty, comfort and strength. And here is the power—40 to 46 horsepower—which motorists find they need.

All this, this year, for $1,585.

Write and Compare

Write for our catalog—send the coupon below. Note all the details, equipments and measurements. Compare the width and room, the margins of safety, the appearance and luxury.

Compare the up-to-dateness—the four-forward speeds, the big tires, the center control, the left-side drive.

Do that. Then go to our local dealer and measure up this car.

There's a war this year among "40's," with 72 makers competing. Each is trying to outdo others, or to underbid. You can get a remarkable Forty this year for half what men used to pay.

Judge for yourself who is winning this war—who gives the greatest value—who has the ablest men. Send the coupon now.

Michigan "40"

$1,585

Special Features

Four-forward speeds, as used today on all the best foreign cars.

Oversize tires—35 x 4½ inches—wider, we think, than on any equal-weight car.

Electric lights with dynamo.

Center control.

Left-side drive, to which all the best cars are coming.

40 to 46 horsepower.

Long-stroke motor.

Brake drums, 16 x 2¼ inches, making them extra efficient.

Springs two and one-quarter inches wide—50 inches long in the rear.

Shortsville wheels, with 1¾-inch spokes—12 to each wheel.

Demountable rims—Firestone quick-detachable, with extra rim.

Steering post adjustable. Also brake and clutch pedals, insuring perfect comfort and fit to every driver.

Wheel base, 118 inches.

Rear seat 50 inches wide inside—22 inches deep. Doors 20 inches wide. Tonneau room 50 inches either way.

Straight-line body, with 22 coats, designed by John A. Campbell

14-inch Turkish cushions. More depth and comfort, we believe, than in any other car.

Nickel mountings.

Electric headlights, extra powerful—12½ inches in diameter.

Sidelights set in dash—flush with it.

Windshield built as part of body, easily inclined to any angle.

Mohair top, side curtains and envelope.

Electric horn.

$50.00 Speedometer—4-inch face.

Over-capacity averaging 50 per cent. Each driving car sufficient for a 60-horsepower motor.

Foot rail, robe rail, rear tire irons, tool chest completely equipped, under running board out of way.

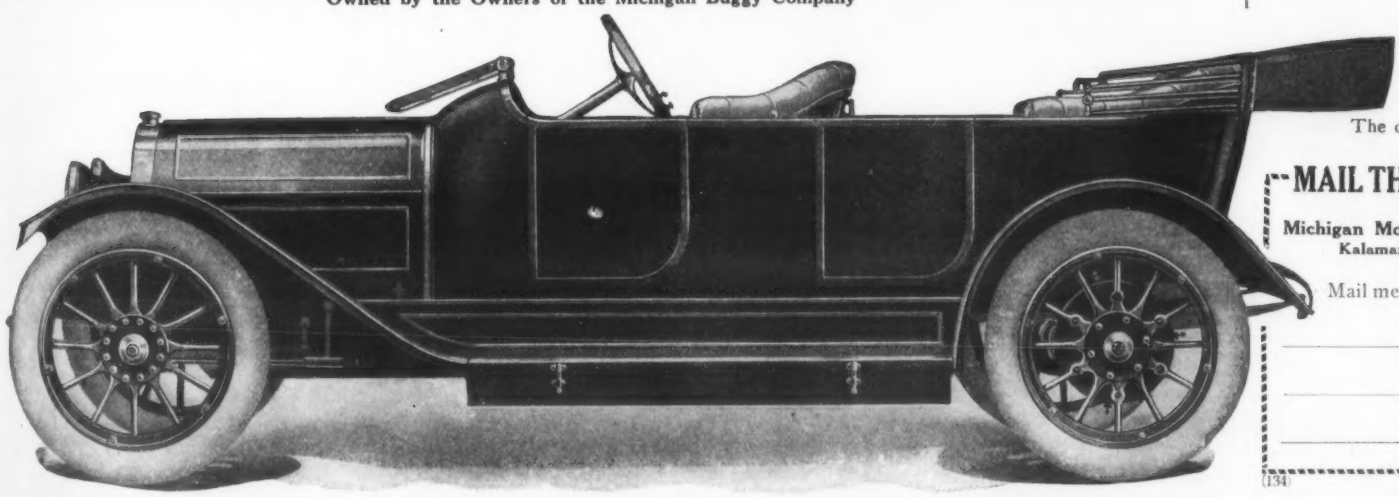
Self-Starter

Men differ so about self-starters that we adopt no type as regular equipment.

Either a gas starter, or an unfailing electric starter, will be added at moderate extra price. The car has a dynamo.

MICHIGAN MOTOR CAR COMPANY, Kalamazoo, Michigan

Owned by the Owners of the Michigan Buggy Company



MAIL THIS COUPON

Michigan Motor Car Company
Kalamazoo, Michigan

Mail me your 1913 Catalog

(134)

Taking the Automobile Seriously

We Have Made of the Motor Car a National Institution Without Giving It Intelligent National Consideration

By WILLIAM ALLEN JOHNSTON

WE ARE face to face to-day with a very serious automobile problem—so serious in so many ways that its consideration cannot longer be put off. Least of all should there be any shortsighted attempt, supposedly in the interests of sport or business, to conceal its existence.

It is the problem of automobile accidents.

You read of them practically every day. But even the most distressing now fails to shock. Their very frequency has made them seem natural, inevitable happenings. But if you were to clip, each day, the items of accidents from all the papers in the country and note how the clippings average, during the summer months, fully half a hundred a day, you would get quickly enough an appalling idea of the situation.

Evidently there is a general awakening. The coroners' clerk of New York City, after compiling a recent report, exclaims that the metropolis is fast becoming as perilous as a battle field. Mayor Harrison of Chicago adds that automobile fatalities there exceed the accident roll of the old days of railroad grade crossings. Cities everywhere are having aldermanic investigations, and some have sent their chiefs of police to Europe to find out why accidents are much fewer there. Massachusetts gave over a good part of her last legislative session to the problem, and other States will follow suit this year.

THE AUTOMOBILE IS NOT AT FAULT

EVERYWHERE there is a good deal of unrest and effort—of some demoralization, too; but there are lines of progress already under way that promise much ultimate good.

First of all, it should be stated that out of all the factors concerned in the safety of automobiling—and there are a number—the automobile in itself is not at fault. As regards strength of construction, materials, and safeguards, there is little left to be perfected. It is apparent that in these essentials the manufacturers to-day are practically at a competitive standstill.

The great trouble is with ourselves. We do not, seemingly cannot, take the automobile seriously. We have never understood its significance, do not now; and for this very reason we have failed to surround it with the safety it demands.

This remarkable misunderstanding is more to be deplored than wondered at. The automobile has developed with amazing sweep and swiftness. It was not so very long ago that the makers of the first automobiles in this country had it all figured out that only a few rich men would own motor cars. Then consider the situation to-day.

Right now there are close to a million automobiles in this country. That means that practically one in every one hundred men, women, and children in the United States owns a car. This year the population will increase something over a million and a half; but there will be made and marketed at least a quarter of a million automobiles, or one to every six new citizens.

Still even this remarkable proportion does not sound the situation. There is yet to be considered the commercial car—now only in its infancy.

More than 250 firms are making commercial cars this year. One concern sold its product to over 140 different lines of business. Twice as many of these vehicles were in use in 1912 as against 1911.

Already the light delivery car, which now throngs the city streets and is ordered by the metropolitan merchant in fifty and one hundred lots, is being used by the village storekeeper. The physician's car is everywhere. Ambulances, fire apparatus—all such vehicles that can be—are motor-driven. At night, about the shipping terminals of the manufacturing centers, the pavements fairly rock with seas of heavy motor trucks.

What does it all mean?

Why, simply this: that we have made of this vehicle a national institution, an interwoven factor everywhere of our daily activity. In turn, this swift, heavy, often silent engine has usurped our crowded city streets and country lanes and highways.

This is the situation; and out of it an alternative stands as clear as daylight. If we continue not to take the automobile seriously, if we fail to regulate it as fast as it is being extended, then it follows inevitably that the city battle field of New York's coroners' clerk will become a national one.

GETTING DOWN TO CAUSES

THERE is a widespread belief that overspeeding causes nearly all accidents and is at the root of the whole problem. The speed-mania idea has proven popular and is superficially accepted as a fact. An executive of the National Highways Protective Association said recently that the speed mania causes more deaths than the mania for murder. A Western judge announced solemnly that he could judge an arrested offender by the state of exhilaration or speed intoxication in which he found him and would fine him accordingly.

THE INTERMINGLED FACTORS

THIS, of course, is pure claptrap. But seriously regarded, the assumption that speed is at fault is *not* supported by facts. True, the newspaper reports in a number of instances state that the car involved was being driven at a high rate of speed; but they fail to report, what the investigation almost always brings out, that the driver was careless or incompetent, or that somebody else was—that the rules of the road and of common sense were broken—that safety devices were not used, etc., etc.

We may put the whole matter in a nutshell by stating that it is the carelessly driven car at low speed that is most dangerous and not the carefully driven fast car.

In Massachusetts, out of 504 investigations of serious accidents there were but three convictions for overspeeding, while 137 were charged with improper operation, 41 with recklessness, and 14 for being under the influence of liquor. This is a representative percentage.

Speed laws will not stop these abuses. However sweeping they are made, they cannot but scratch the surface, and they will defeat their own aims. We will have to go deeper down into the causes and seek to correct them.

These are the factors that are fundamentally concerned with automobile accidents:

Automobile laws and ordinances, magistrates, police, motorists, equipment devices, traffic regulations.

All these factors are closely intermingled in the problem; and at present they do not work in harmony. Take any two and you will find between them either out and out bickering, or else a measure of misunderstanding. What is broadly demanded, and this is the direct solution of the difficulty, is cooperation between them all. Out of cooperation and mutual understanding will come liberality and sanity. And out of these—and only in this way—we shall have safety.

It is the carelessly driven car at low speed that is most dangerous

CRAZY-QUILT LEGISLATION

OUR State automobile laws to-day, viewed from a national standpoint, resemble a crazy quilt filled with large holes. It is exceedingly doubtful if a motorist, even with a digest of these fifty-seven varieties of laws pinned to his steering wheel, could traverse the country and not be a constant lawbreaker through forgetfulness or confusion.

Eight States have no laws whatsoever. Nevada's law is confined to a single provision, namely, the filing of a license fee of $2.50 per month and a fine for negligence in payment. Seven States and the District of Columbia have laws so obsolete as to be ridiculous upon their face. Obviously they were framed with only a vague idea of just what the automobile was, still less what it was destined to be; they are headed: "An act to regulate the running of automobiles, locomobiles, autocars," etc. In Alabama, according to a literal interpretation of the law, all cars must be driven backward at night in order that the rear lamps may be "visible at least fifty feet in the direction in which the car is proceeding." Iowa and several other States have improved upon the law by changing "in" to "from." The Ohio law, one of the obsolete group referred to, declares that anyone who fictitiously represents himself as a chauffeur may be suspended from the right to operate a motor vehicle as a chauffeur for a period of six months. Georgia is very liberal, allowing a small boy or girl to operate a car; its law states that no one under sixteen years of age may drive a car, *unless* "such minor shall have previously twelve months' experience in the operation of automobiles." Automobile hearses are ruled out of West Virginia and North Carolina by a law exempting automobiles from cemeteries. And so the hodgepodge list—mostly of nonessentials—runs on. Even in such essentials as they have no two States are at all alike.

WHY NOT A CONFERENCE OF STATES?

IT IS encouraging, however, to note that some States are progressing sanely. Massachusetts, while lax about owners, has an excellent bureau for the examination of chauffeurs. Maine has an intelligent signal law requiring that a horn not only must be sounded but *heard* an adequate distance. New Jersey has a provision so much favored by considerate, experienced motorists everywhere that it at least deserves the legislators' most serious consideration, namely, that every horse-drawn vehicle shall carry a light after dark. And Virginia sounds the keynote of all State automobile legislation in authorizing "the Governor to confer and enter into agreement with the proper officials of other States as to uniformity in automobile laws."

Why not such a conference of all the States? In addition to the proper officials, let it be attended by legal, engineering, road and traffic experts, together with leading automobile club officials. It is comparatively a simple matter to make a table of existing State laws, grouped under such important heads as Registration, Licenses, Fees, Nonresidents, Warning Signals, Lights, Speeding, etc. By selecting the best of the existing laws, eliminating the useless and adding the necessary, a law, Federal in scope, uniform and effective in the interests of all, may certainly be had.

This chaos of State laws is even worse in its consequences than in itself. The more inadequate the State law the more each city and village within the State feels itself called upon to pass specific ordinances in an effort—almost always futile—to make up locally for the general deficiency. As a result such a heterogeneous mass of ordinances exists that a cross-country motorist, to be law-abiding, ought to have a bureau of information to consult before entering each municipality.

HASTILY FRAMED, ILLOGICAL LAWS

GENERALLY these laws are framed hastily, without regard to uniformity, logic, facts, or legality. As a result they are often flatly unconstitutional, and wholly absurd.

In Cincinnati, as an instance, a city councilman is enraged because a drunken chauffeur in a garage next door makes the night hideous by sounding an electric horn. He marches to the City Hall next day and begins

What Shows Don't Show

By R. E. Olds, Designer

You'll see the new model of Reo the Fifth at your local Automobile Show.

It will strike you as beautiful, luxurious, roomy—having every final touch.

But here are things you can't see. And they mean, in the end, more than all that shows.

Tire Mileage

Tires on a car form the chief item in upkeep. Tire-saving means more than all other savings together. Every old motorist knows this.

So this year I add 30 per cent to my tire cost, to add 65 per cent to the average tire mileage. I give you tires 34 x 4. Compare them with rival cars.

The usual tires on this type of car would more than double your tire cost, so tire makers say.

No Possible Flaws

The steel in this car is twice analyzed, to make sure it accords with my costly requirements.

The gears are tested in a crushing machine, to prove that each tooth will stand 75,000 pounds. This test is usually made with light hammers.

The springs are tested in another machine, to stand 100,000 vibrations.

I use in this car 190 drop forgings. The average cost is twice that of steel castings.

But they give me lightness and strength. And hidden flaws can't occur in drop forgings.

The various parts of this car get a thousand inspections. Thus all the uncertainties are completely eradicated in building this Reo the Fifth.

No Broken Bearings

I use in this car 15 roller bearings, 11 of them Timken, 4 Hyatt High Duty.

They cost five times as much as the usual ball bearings. But good roller bearings don't break under strain.

No Overtax

It's the sudden shock which shows up a car's weakness, not the ordinary tests. And sudden shocks will come.

To withstand them, I give to axles and driving parts 50 per cent over-capacity. I have made them all ample for a 45-horsepower car.

To prove them out, I ran one of these cars for 10,000 miles, at top speed on rough roads. I met at its worst every possible road shock, and not one important part gave out.

I use 14-inch brake drums. I use 2-inch, 7-leaf springs. I use costly steels—chrome nickel, vanadium, manganese—all to ward off an overtax. I place cost below safety in this Reo the Fifth.

No Troubles

That isn't quite true. All machines have their little troubles. But I've gone to the limit to save trouble with this car.

Each engine is tested 20 hours on the blocks, and 28 hours in the chassis. There are five long-continued tests.

My carburetor is doubly heated—with hot air and hot water—to save the troubles with low-grade gasoline.

I use a $75 magneto to save ignition troubles. I use a centrifugal pump, instead of a syphon, to insure the water circulation. That costs about $10 extra.

Cars are built slowly and carefully, parts ground over and over. I limit my output to 50 cars daily, so nothing shall be slighted.

No Skimping

To make the car show my infinite pains, I give equal care to the finish.

The body has 17 coats. The luxurious upholstering is of genuine leather, filled with the best curled hair.

There are three electric lights, and the dashboard lights are flush. And the whole car, even under the hood, is fully nickel-trimmed.

Center Control

Our center control is exclusive to this car. All the gear shifting is done by one small handle, completely out of the way. It is done by moving this handle only three inches in each of four directions.

Both brakes are operated by foot pedals. So no levers at all clog the way of the driver. And this permits of the left side drive.

No other center control will please a man who once discovers this.

Add $200 to My Cost

These extremes I figure, add $200 to the necessary cost of this car.

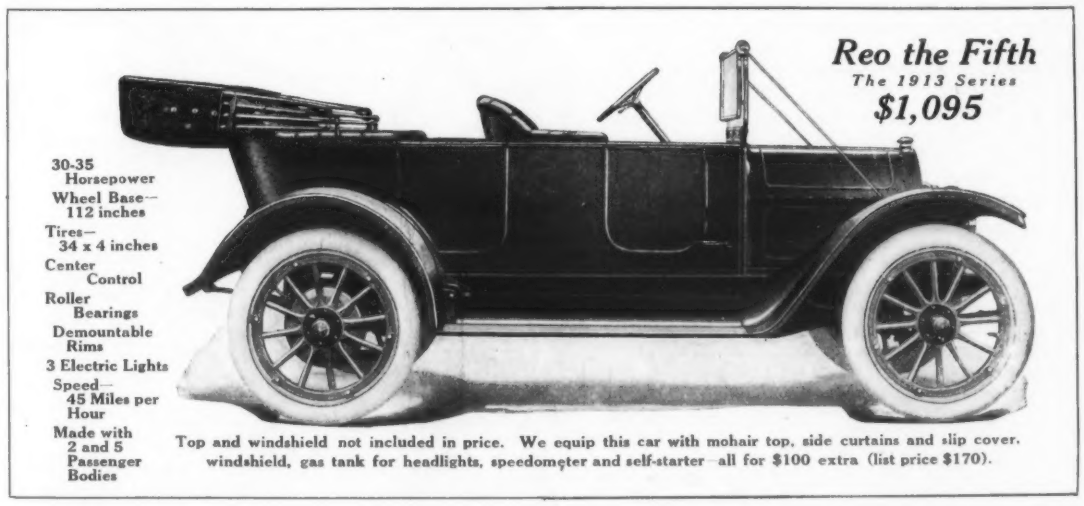
They cut down our profits. They force us to factory efficiency. They compel us to build every part ourselves. And, to minimize cost, we build only one chassis.

But these things save users from three to ten times what it costs me to give them to you.

They insure to you safety, economy, comfort. They insure to me that reputation I have spent 26 years in acquiring.

I find that car users, more and more, are coming to look for this class of car. Our output is always much oversold. And this year, with 60,000 excellent cars to my credit, the demand will be greater than ever.

A thousand dealers are now ready to show this new model of Reo the Fifth. Our 1913 catalog is also ready. Write us for it now.



Reo the Fifth
The 1913 Series
$1,095

30-35 Horsepower
Wheel Base—112 inches
Tires—34 x 4 inches
Center Control
Roller Bearings
Demountable Rims
3 Electric Lights
Speed—45 Miles per Hour
Made with 2 and 5 Passenger Bodies

Top and windshield not included in price. We equip this car with mohair top, side curtains and slip cover, windshield, gas tank for headlights, speedometer and self-starter—all for $100 extra (list price $170).

R. M. Owen & Co. General Sales Agents for Reo Motor Car Co., Lansing, Mich.

Canadian Factory, St. Catharines, Ont.

(126)

the framing of an ordinance prohibiting the use within city limits, by all motorists, of any signal save the soft-toned bulb horn. If the chauffeur had used his voice instead of his horn, he himself would have been arrested as a disorderly person. But automobile ordinances are in vogue. An offending piece of equipment is ruled disorderly instead. All motorists, comprising reputable, considerate, law-abiding citizens, are involved over the insane conduct of one incompetent chauffeur; the public is deprived of a safety device the efficiency of which measures their protection; and the spirit and intent of the State law which demands a signal "suitable" to warn safely is broken.

In Syracuse a "young blood," pleased with his new toy, goes shrieking and speeding over the avenues one

In Maine the horn must not only be sounded but heard!

night. Result: radical speed and signal restrictions for all motorists and the entire civic body to bear. In Memphis an insolent negro chauffeur brings down the wrath of the city—not upon himself but upon the automobile. I could give fifty such instances, each the sole basis of statutes so absurd that the police are compelled in practice to wink at them.

Drastic ordinances are devised in many cities, so the authorities freely admit, simply to give the local magistrate sufficient latitude to deal effectively with his cases. In Shreveport, La., it is unlawful for any person to drive an automobile "unless he shall have been first duly examined by the city physician and found fully competent, mentally and physically." Rather staggering, this, to the average motorist! But the chief of police has explained that it was meant simply as a roundabout check on reckless drivers by giving a broad and easy way of arrest.

The point of the matter is that there would be no occasion for these sweeping, indefinite rulings, if the State laws themselves were not all at sea. If the latter were adequate and definite they would govern well—in the essentials at least—the local situation.

We do not, throughout the country, need more State laws. In some of the Eastern States there are too many. But as a whole they are neither comprehensive nor effective; and in their multiplicity they are bewildering. They are not fundamentally framed. It is like beginning a house wrong in the building of it, and then patching it high and low to correct its faults. To begin fundamentally means to begin understandingly; we began wrong because we didn't understand the automobile, and it would seem as if the correct basis could best be had through an able commission, or at least through a conference in which all factors concerned were equally represented.

BEWILDERED AND BAFFLED MAGISTRATES

WITH the maze of State laws and local ordinances —often conflicting on such points as speed, lights, road rules, signals, and the like—it is not to be wondered at that the magistrate is bewildered and baffled. Give us definite laws, uniform laws, laws to fit the crime, they cry. In Chicago a municipal judge, casting about for a legal basis on which to deal with two cases of flagrant recklessness brought before him, finally construed the automobile to be a "dangerous weapon," and fined the culprits $1,000 each.

But both these accidents, in each of which a little girl was seriously injured, were due to violation of common-sense traffic regulations which did not then but now do prevail in Chicago. They do not have such accidents in Europe; we need not have them here.

Clear analysis of the causes of accidents and cooperation with others to help remove them is just as necessary upon the magistrate's part. To-day he and the motorist are about as widely apart as any two factors in the whole situation. An excellent indication is the recent announcement from the bench by a Winnipeg judge, who hotly declared that he would "shoot down the motorist" who ran into him.

Motorists say that magistrates who take up motoring immediately show liberality and sanity in their decisions to the betterment of all concerned. This seems to be borne out by the successful experience of a Kansas City judge, who undertook to secure a rudimentary and driving knowledge of the automobile.

"Liberality and common sense," says he, "should direct the framing of the laws, and the magistrate should interpret them in a like spirit. . . . A decision should always be based upon the peculiar circumstances involved—wise regulation is the only solution of the whole problem. We will never progress by indefinite and drastic restrictions."

The matter of traffic regulation is most important. Germany, by a scientific study of its city traffic, succeeded in reducing accidents from 15 per cent (of number of cars in use) in 1907 to 11.9 per cent in 1911. These percentages loom large, it should be explained, because all kinds of mishaps are included, even an "accident" so slight as injuring the bark of a tree.

"GETTING THE HABIT"

A NEW era of traffic regulation is on in this country. But as yet we are far from a successful readjustment of rules to admit of the automobile. We are even far from an appreciation of the necessity of this readjustment. It is curious that in the case of a few cities, where traffic officials have been sent for information to Europe and to larger cities in this country, it was not realized on any side that the automobile had very much to do with the matter. Here again the deadly lack of understanding!

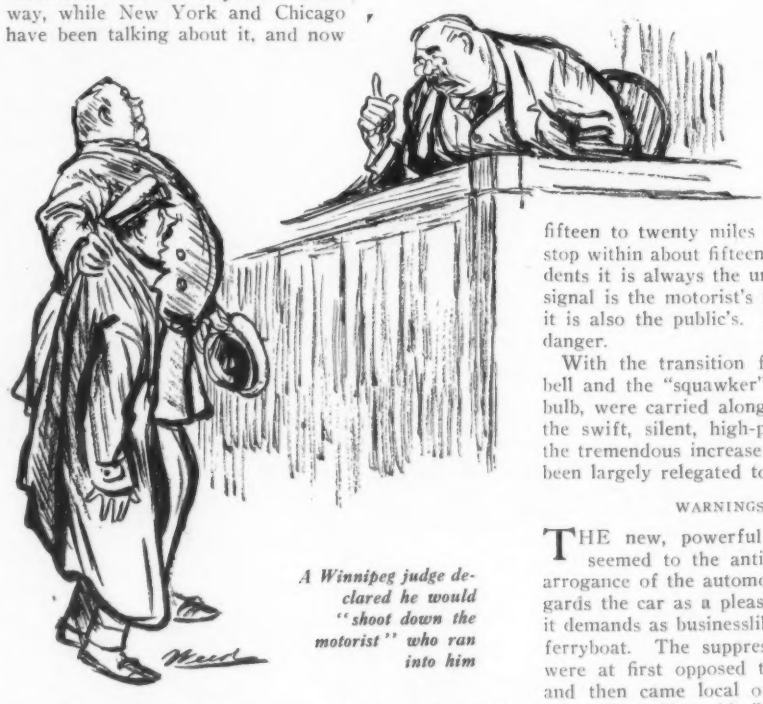
Chicago has gone at the problem seriously. First of all, it was found that the great majority of accidents were happening, not on the boulevards where motor traffic was many times greater and speed from 50 per cent to 80 per cent higher, but on the less motor-traveled streets. These are the streets of mixed traffic, where an automobile is one moment passing a horse-drawn truck, then a motor truck, and in another instant is side by side with a trolley car stopping to take on or let off passengers.

It was the latter situation that was judged most dangerous, and it is the writer's rough estimate, based upon an examination of thousands of accidents, that throughout the cities of the country more people are injured by automobiles in this manner than in any other way. The City Council in Chicago was quick to pass an ordinance compelling all drivers of motor cars and all motorcyclists to stop at all street crossings when street cars have stopped to take on or discharge passengers; also drivers are called upon to halt within not less than ten feet of cars that have stopped. Detroit and Cleveland have already had similar ordinances in effect with the result of greatly minimizing accidents from this cause.

A GOOD TRAFFIC RULE

CHICAGO also recommends that slow-moving vehicles keep to the curb, and insists that this rule is the fundamental solution of mixed traffic problems. This regulation is in force in most large cities.

Regulation of the pedestrian is an important element here. Kansas City has led the way, while New York and Chicago have been talking about it, and now



A Winnipeg judge declared he would "shoot down the motorist" who ran into him

has a law controlling pedestrians. Cutting of corners is forbidden by the crossing patrolmen, and the offense is punishable by a fine of from $5 to $50. The new law, it is claimed, has eliminated many accidents. Philadelphia has adopted London's "isles of safety" plan. Motor drivers are compelled to make wide detours in rounding corners, inside of which are safety stands for the pedestrians. New York has had great success in establishing these isles of safety within its traffic-crowded squares.

The regulation of pedestrian traffic is an essential. The pedestrian should have his due rights in the highways; but he must remember that the sidewalks are his restricted rights of way, and that street crossings are designed especially for his protection. He must live up to the iron-clad traffic regulation of the crowded centers just as strictly as the vehicle is compelled to. The police records of New York City show that out of 2,500 accidents, 800 happened in the middle of the block. These are directly chargeable to pedestrian carelessness, and can only be eliminated by beginning with the factor at fault.

Briefly, what is needed are just such basic regulations in all the traffic centers and the extension of many of them into the suburbs, smaller cities, and semisuburban sections. Then we need rigid enforcement by the police to take the place of the present chaos in the smaller cities and villages—where such action as is taken is generally due to the whim of a corner policeman. Uniformity of rule and enforcement sounds the keynote. When the pedestrian *gets the habit* of following regular crossing routes and of looking to the right and left; when the driver of the horse-driven vehicle learns to hug the curb; when the motorist knows that in Rochester, Keokuk, San Diego, and Silver City he will find similar road rules and *have* to follow them as strictly as in Chicago, then only shall we have a cessation of those frightful collisions and pedestrian accidents which the newspapers wrongly charge to overspeeding.

"AUTOMOBILE COMING! LOOK OUT!"

PUBLIC controversy has been considerably stirred up the past year over the two important safety devices of lights and signals; also the unnecessary nuisances of the muffler cut-out, smoke, and dripping oil have had a goodly share of attention.

That the muffler cut-out adds little, if any, power to the engine, and in the city is a wholly unnecessary noise; that with a new engine, and generally in starting, a little smoke is necessary, but otherwise easily preventable; and that a little care of the drip pan will keep pavements from being smeared with oil—these facts are more generally understood, and the trend of recent ordinances is to regulate the motorist accordingly.

As to lights, despite a number of freak laws on the subject, the ruling of two white lights in front and one red light in the rear seems a model ordinance, together with the further provision that the dazzling front lights be dimmed on city streets. The provision, so much championed by motorists that horse-drawn vehicles shall also carry a light after dark, is also a wise one. Milwaukee, St. Louis, Pittsburgh, Los Angeles, Providence, and Buffalo have such an ordinance applying to all vehicles, whether moving or standing still.

The signal situation has been more complicated and its development exceedingly interesting. Into it have crept a good deal of the direct opposition to the automobile, the general lack of appreciation of its seriousness as a traffic factor, together with such important considerations as the rights of the motorist and the welfare of the public.

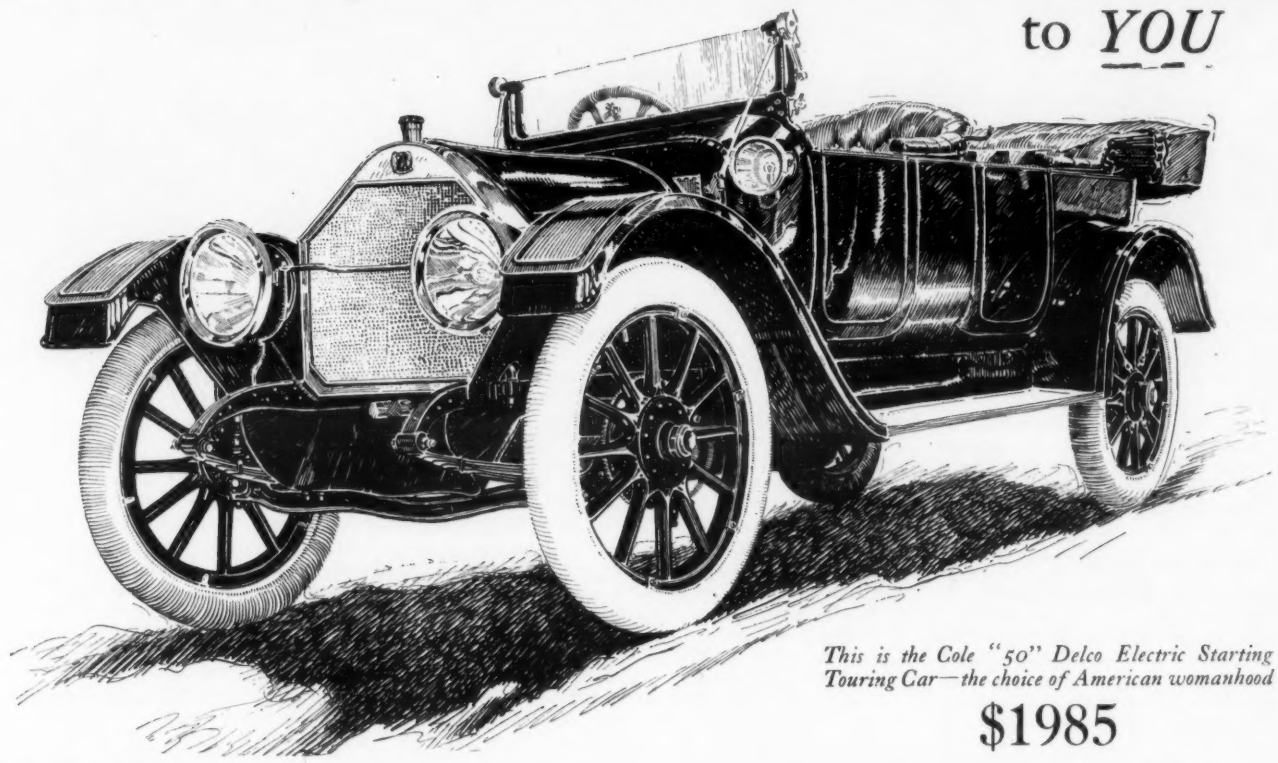
First, it must be conceded that the warning signal is a fundamental safeguard; often it is the means of last resort. In some remarkable brake tests, recently made by the Aldermanic Board in New York City, it was shown that a car going at the rate of fifteen to twenty miles an hour could be brought to a stop within about fifteen or twenty feet. But with accidents it is always the unexpected that happens, and the signal is the motorist's first and last safeguard, just as it is also the public's. It is the voice of automobiling danger.

With the transition from bicycle to automobile the bell and the "squawker" horn, sounded by squeezing a bulb, were carried along; but with the development of the swift, silent, high-powered gasoline car and with the tremendous increase in automobile traffic both have been largely relegated to the past.

WARNINGS MUST BE HEARD

THE new, powerful electric signal, however, has seemed to the anti-automobilist to voice only the arrogance of the automobile, and the man who still regards the car as a pleasure fad cannot understand why it demands as businesslike a signal as a locomotive or a ferryboat. The suppressionists of unnecessary noises were at first opposed to this signal's very existence; and then came local ordinances ruling against it because some "joy rider" had used it as a noise maker instead of in its legitimate function as a warning device. These hastily and ignorantly devised laws could not rule the signal out entirely, for the very good reason that every State law compels an automobile to carry a "suitable" warning signal. But the word "suitable" was

Leave comfort, convenience and beauty lines to *her* —she is leaving the price and mechanical correctness to *YOU*



This is the Cole "50" Delco Electric Starting Touring Car—the choice of American womanhood

$1985

MAKE the purchase of your next motor car a domestic business transaction. Recall how you and the wife built the home? You bought the lot where values were right and selected the architect on the strength of his reputation. You watched the plumbing—you planned the heating plant. You demanded nothing but "bests" in the entire construction.

You left the social environment, the convenience and the interior decorations to her—this was *right*. When it was all done two things had been satisfied—a woman's intuitive appreciation of beauty and a man's cold business judgment. It's a combination that can't be beat—take it with you when you go to buy your next motor car.

The character study of the Cole Motor Car at the top of this advertisement is for her eye—not yours. Dry tabulated specifications are for you and you alone. After careful investigation of the Cole and other cars as well, your preference will be—

The New Series 8—"50"

COLE

Its Principles of Construction

Silent Cole unit power plant with three point suspension and all working parts enclosed. A motor free from grease cups, with automatic lubricating system and combination thermo-syphon and force pump water circulation. Timken front and full-floating rear axle with large Timken bearings. Large brake drums on wheels equipped with Firestone demountable rims, 122-inch wheel base. Gasoline pressure tank and tire rack in rear. Straight line body with concealed hinges and locks. Deep Turkish, hand-buffed leather upholstery. Silk mohair top. Clear vision ventilating windshield and speedometer with grade indicator. Solar electric lamps—nickel-silver trimmed. Price for Cole "50," completely equipped, $1985.

In addition to the "50" the Cole comes in two other chassis: Cole "40," 116-inch wheel base, price, completely equipped, $1685; and the Cole six cylinder "60," price, completely equipped, $2485

No difference in quality—merely diamonds of varying karat

Cole Motor Car Company

Indianapolis, Indiana

Tell her that you can "see" the Cole at the New York Show in January or at the Chicago Show in February

"So far, so good"—you say

All right. Now let's fill out this coupon. It doesn't obligate you. Back will come the Cole Blue Book for "her"—the Technical Bulletin for you. Your business judgment will prompt you to send the coupon by return mail—before you lay this magazine aside.

"OUR" COUPON REQUEST

COLE MOTOR CAR CO., INDIANAPOLIS

We have decided that the Cole is worth investigating. It is understood that we assume no obligation in asking for the Cole Blue Book and the Technical Bulletin—so send by return mail, postpaid.

*"Her" Name*_____

*"My" Name*_____

Address _____

indefinite enough, so the lawmakers excluded the efficient signal in favor of the weaker-toned and old-time bulb horn.

The latter, as every motorist knows, is undependable and inadequate; and for a time a state of misunderstanding among motorists, coupled with actual danger to the public, has prevailed throughout the country. Chicago, with a fast increasing accident list staring its authorities in the face, started a reform by tackling the signal problem first. Legal experts and traffic officials were called into consultation, tests were made; and the problem was finally settled so expeditiously that the same result, it seems, might have been had on a simple basis of common sense.

First, it was realized that an adequate signal is a necessity; and, secondly, that to be adequate it must be loud enough to be heard under all circumstances and all conditions of traffic, and it must give a harsh, abrupt note, one, in other words, that means business, that speaks seriously enough of the potential danger of an approaching car.

On the other hand, it was seen that the very efficiency of such a signal makes it a nuisance in the hands of the "joy rider" and generally inconsiderate, irresponsible motorist. So the simple provision was added that the signal must not be used unnecessarily nor in any way except as a warning of danger.

The enforcement of this ordinance, beginning last spring, has been successful; and St. Louis, Newark, and a number of cities have been quick to adopt it. It has been approved by the American Road Congress, the Automobile Association, and will undoubtedly become a general State law.

TAKING CHANCES

AS REGARDS the motorist and his responsibility for automobile accidents, a goodly volume might be written. Undoubtedly he is largely to blame. But there is much to be said—a good deal—in his favor. He is by no means the demon the newspapers paint him; nor is he by any means the cause of the multitudinous accidents they ascribe to him. He is about 90 per cent pure in spirit. He is—by that percentage or more—a decent, clear-headed, law-respecting, self-respecting citizen, who is often blamed, however, for the faults of the other 10 per cent. The publicity the latter get for their wrongdoing is enough to color, in the eyes of the public at large, the whole motoring fraternity.

Now, of this 10 per cent, a number are lawless and reckless—criminal in action if not in intent. But a greater number, and a great number, too, of the 90 per-cent class, are to blame for accidents through sheer incompetence. They are lacking both in a practical knowledge of a car and in an appreciation of its seriousness. They are of the "I-didn't-know-it-was-loaded" kind. They are constantly "taking chances"—just ordinary, innocent chances—the sudden results of which are featured in the newspapers with a four-column spread of big type.

INSTRUCTION IN FRANCE

THERE are a hundred or more of these "chances." They multiply as automobiles multiply. They are thick fore and aft in the city; but in the country they are omnipresent, too. The old days, when a car had a country highway practically to itself, are long past. Cannot the motorist understand that? He, above all others, should know the increase of traffic and what it means.

The motorist to-day who drives his car with such speed that should an emergency occur he could not in time control it is taking desperate chances—every time he approaches a concealed road or a street intersection or railroad grade crossing; every time he crosses a wet spot; every time he makes a road curve; every time he approaches a bridge; every time he passes a horse-drawn vehicle; every time he passes a schoolhouse—the list is too long, and at night and in the city it is multiplied.

Now, he need not, does not, take these life and death chances—provided he knows his car and how to handle it, provided he has adequate signals and *uses* them as freely as is necessary, and last but not least, provided he slows down at every danger point to a reasonable and proper speed.

In France every driver of a car is thoroughly instructed by Government supervisors before he gets his license. He is taken, side by side with the supervisor, through the winding paths of the Bois de Boulogne, through the tangles of street traffic, in and out of narrow alleys, over country roads, past dummies thrown before him—and so on till he is competent and careful in driving, until he gets to know the parts of a car and how they work, and why. Then they let him drive as fast as he wants to, but *carefully*, skillfully, and with strict observance of every road rule.

That is beginning right at the bottom; and until we do this, State by State, we shall have motorists who swell the mortality list by taking chances; and we shall have more freak laws, more opposition to and misunderstanding of the automobile, and be still removed from the ideal of adequate and uniform State legislation.

THE MASSACHUSETTS METHOD

MASSACHUSETTS has made excellent strides with her system of thoroughgoing road and mental examinations for all chauffeurs within the State, and all New England bids fair soon to adopt the system. The necessity of this examination is self-evident. Out of 4,648 drivers examined in Massachusetts 2,920 failed at the first examination and 529 failed altogether at the finals. Investigations of accidents are made promptly by the State Highway Commission, and licenses are revoked on evidence of incompetency and recklessness. Three hundred and sixty licenses were suspended or revoked in 1911, or about one a day.

Massachusetts, however, has only a superficial examination for owners of cars; and New York has no owner's examination worthy of the name. Moreover, out of New York City's 22,157 licensed chauffeurs (licensed after examination) it is doubtful if very many are up to the French standard of safe driving, and a recent, somewhat hurried investigation disclosed the astounding fact that over 150 of the licensees—principally taxicab drivers—had criminal records.

What chaos there would be in railroading if locomotive engineers had comparatively as little fitness as automobile drivers, if they were not all picked men, graduated from successful lower ranks by years of practical experience and tested qualifications! Yet many more dangers beset the automobile driver on his unrestricted right of way over all our countless highways in a vehicle of equal speed capacity and in number soon to be rated at the million mark. Take the city motor truck alone. Shall we intrust the safety of humanity-crowded streets to these ponderous five-ton vehicles, run by men whose main qualification is previous experience in driving horses?

THE SOLUTION IS IN COOPERATION

THE basis of safe driving is an adequate examination for owners and drivers alike. A superficial examination is little better than none at all. It is not enough that an owner is willing to risk his own life and property with his inexperience. It is a very grave and broad problem of public safety.

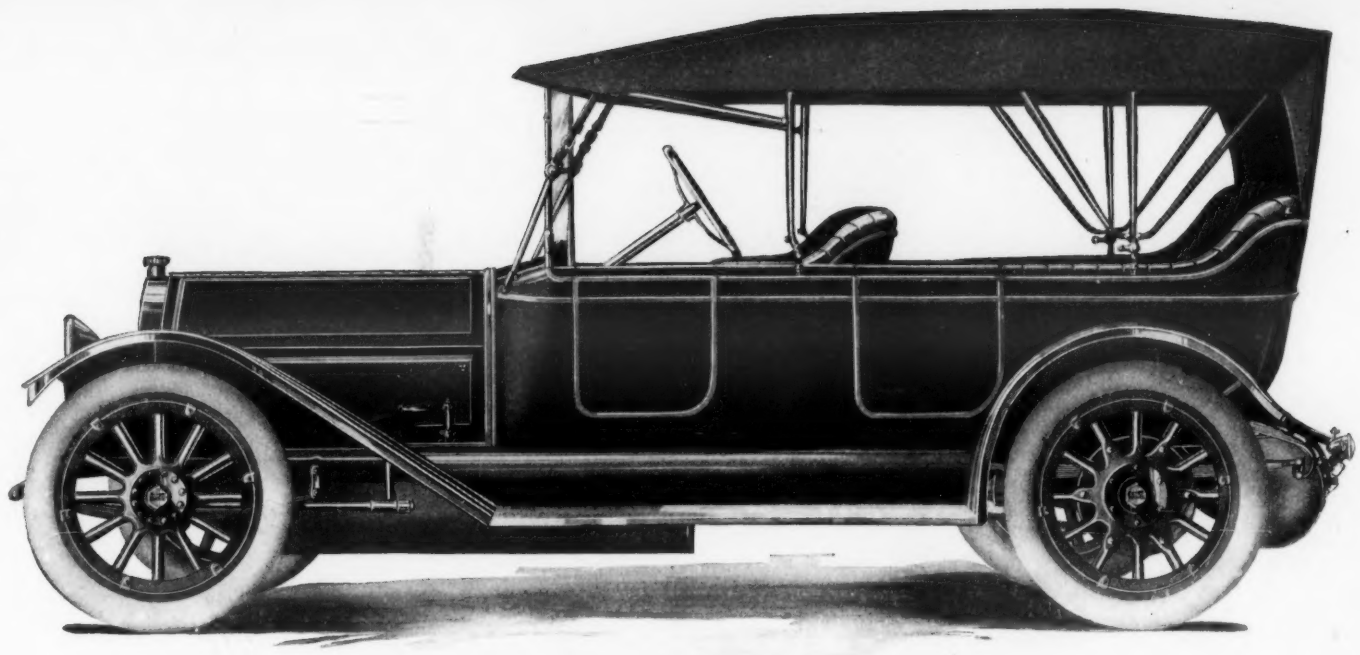
As for the deliberately reckless driver, there is nothing for him but a "strong-arm" method of extermination. He is bound to eliminate himself eventually, but before that he may kill or maim others. He is a serious public menace.

The police could do much to stamp out reckless driving by exercising extra surveillance and arresting the driver when he takes his "hairbreadth" chances; and when the accident does happen a court of investigation should act promptly, and if the evidence so justifies this action, permanently revoke the driver's license. It is decidedly up to the owner, too, for the protection of his rights and reputation; and it is up to the chauffeur, for the protection of his calling, to help the police and magistrate in apprehending the foolhardy and dangerous driver.

These men are the factors on safe automobiling. All are closely interwoven. All must be *fundamentally* regulated. That is the way—the only way—and the means is simply intelligent cooperation.

The Czar of Russia Inspecting an American Car

During the past summer the Russian Government held a trial contest to determine the make of motor vehicle to be used by the Russian Army. Forty-five cars and trucks of different makes undertook the trip over an incredibly bad road from St. Petersburg to Moscow and back, every part of the course being carefully watched. The car shown in the picture, of American make, won the contest



Inter-State -45

SIX CYLINDER 45 HORSE POWER

$2750

Electrically Started and Lighted—Four Speeds Forward—Left Hand Drive—Center Control—132-Inch Wheel Base

If you possess even the smallest automobile knowledge, you have, in your own mind, built "The Perfect Car."

We have built the Inter-State just as you would have ordered it built had you been our Chief Engineer.

In millions of miles of automobile-travel, certain standards have proven their fitness just as certain defects have uncovered their unworthiness.

By the process of elimination the motor car buyer has succeeded in locating the real source of his satisfaction or dissatisfaction.

He has expressed a preference for a recognized standard in the essential parts of his car.

He has done more—

He has demanded a superiority in the assembling of those parts that will forever free him from trouble and annoyance.

And you, in turn, have condemned as not wholly complete, any car that failed to include every essential for your comfort and convenience.

We have done exactly the same thing—

Out of the most exacting and careful engineering experience has grown the Inter-State Six—showing all of those tried and proven specifications—any one of which alone would characterize a car of higher price.

Sound and sane manufacturing methods have made possible this splendid car—at so attractive a price.

Our attempt to build "quality"—not "quantity"—to build integrity into every nut, and bolt and screw has produced "*your* perfect car" at exactly the price you want to pay.

And one more thought:

If you pay more than $2750 for these same specifications that mark the superiority of the Inter-State Six; then—

You have paid the price of "advertised-popularity;" or—

You have spent your money with far less care and thought than we have used in the building of this "perfect car."

THE LONG STROKE MOTOR

6 cylinders, cast en bloc; 4-inch bore and 5-inch stroke; enclosed valves; capable of developing a full 58 horse-power to the wheels.

The longer stroke means a longer step on steep hills and heavy roads.

The longer step means more power—steady power—less effort—less heat—less oil—less gasoline.

UNIT POWER PLANT

The unit power plant of the Inter-State Six centralizes the weight of the motor, transmission and clutch, thereby eliminating an uneven balance and an excessive number of universal joints.

ELECTRIC STARTER

The Aplco Motor Dynamo Electric Starting and Lighting System built specially for Inter-State cars is used on this model. The continuous satisfactory service secured from this starting and lighting system on other Inter-State cars has warranted its adoption for our model 45, not as an experiment in any sense of the word, but as a time-tried, absolutely reliable starter of 100 per cent efficiency.

The cranking of the gasoline motor is accomplished by the throwing of a switch which is conveniently located at the driver's left.

It will revolve the motor continuously for 50 minutes if necessary or until the gasoline motor picks up under its own power, at which time the system is automatically disconnected as a starter and operates as an electric generator, furnishing and storing current in the storage-battery, where it is at all times available for starting, for ignition and for lighting.

ELECTRIC LIGHTS

The entire lamp equipment of the Inter-State cars is electrically lighted.

The two powerful Aplco head lamps with special Fry Lens, searchlight effect, capable of throwing their piercing rays 1000 feet, two handsome side lights, Flush Dash Type, built in and flush with the dash, one tail light illuminating the license number, one speedometer light. All lamps lighted or extinguished separately or together at the will of the driver by simply turning a button conveniently located at his left.

Trouble lamp with flexible cord reaching any part of the car.

MOTOR-DRIVEN TIRE PUMP

Every Inter-State is equipped with motor-driven tire pump, which sends clean, fresh air into the tires without any exertion whatsoever on your part.

LEFT HAND DRIVE CENTER CONTROL

In building the Inter-State Six, we have adopted the left hand drive center control because of the added convenience to the passengers in front, allowing them to enter or leave the car from the curb.

For your greater convenience we have added a four speed forward and reverse transmission, direct drive on fourth speed.

BODY DESIGN AND FINISH

The body is a special design straight line effect. Seats five passengers. Has the cowl effect in front and the windshield is built in as part of the body.

Twenty-one coats of paint and varnish are applied to every Inter-State car.

The appearance would be the same if we applied but eleven.

The remaining ten are your protection against a spattered, blotchy car after its first trip over muddy roads or half a dozen washings.

Inter-State upholstery is 11 inches deep, upholstered with the best leather we can possibly buy.

EQUIPMENT

The Inter-State comes to you as "distinctively complete" as any automobile manufacturer knows how to make it.

Mohair top, side curtains, ventilating rain vision type windshield built into body, speedometer and clock, complete kit of tools, gasoline gauge, are an example of what we consider fully equipped.

36 x 4½ tires, front and rear Demountable Rims. (5)

Double Ignition Magneto and Timer.

Adjustable brake and clutch pedals.

Pressure feed to carburetor.

Splash and pressure lubrication.

Your Inter-State is ready for you the day it leaves our factory without the necessity of further refinements or further expense.

Models 40—41—42
40 Horse Power, 4½ x 5½ Motor
Fully Equipped
$2400

Models 50—51—52
50 Horse Power, 5 x 6 Motor
Fully Equipped
$3400

Inter-State Automobile Company, 501 First Street, Muncie, Indiana

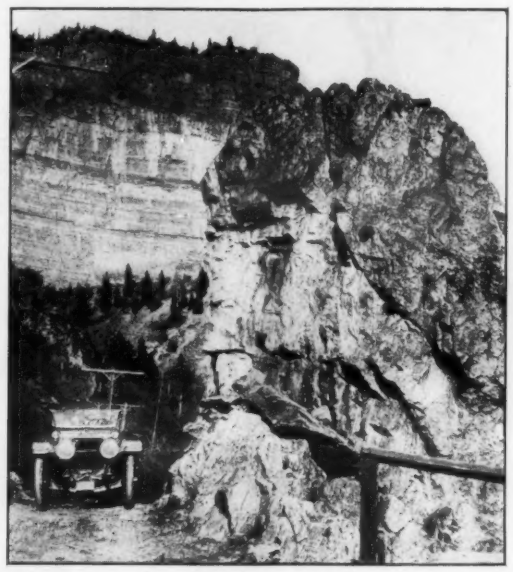
New York Show Space
Grand Central Palace
Space 29

Chicago Show Space
Coliseum Annex
Space Q-3

Boston Show Space
135-141 Main Floor

At the summit of Tennessee Pass, crossing the Continental Divide, elevation about 10,500 feet

There is grandeur in the scenery of the cañons and the passes, and the roads are good



Near Grand Junction on the eastern edge of the vast desert stretching into Utah

Photographs by N. Lazarnick

Over the Rockies

The Scenic Panorama Along the Automobile Route Which Crosses the Continental Divide

THE accessibility of the scenic beauties of the mountains and cañons of Colorado has been discovered by the automobile tourists. People who have seen both Switzerland and Colorado say that their choice is decidedly in favor of the latter. The mountains are higher and more awe-inspiring, the small mountain lakes and streams are more picturesque, and there is a grandeur and ever-changing panorama in the cañon scenery that Switzerland does not possess. On top of these natural advantages, the mountain and cañon roads are extremely good, and the accommodations are all that can be desired. The sun shines nearly all the time in Colorado, and the dry, invigorating air is the best tonic in the world.

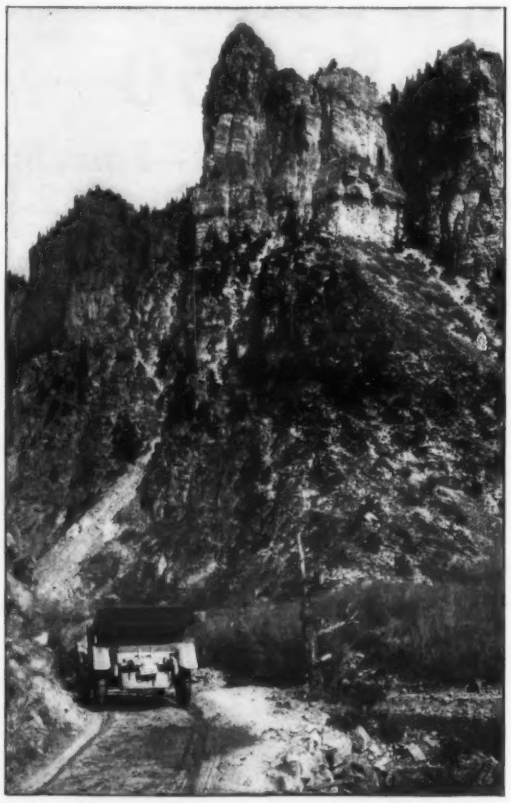
And there is no way of seeing this wonderful country quite so well as by automobile. The motor car goes merrily on, practically where you choose, up over the highest mountain passes, where one can see for nearly a hundred miles in any direction, looking over the top of range after range; and then, with hardly a moment's notice, plunges into a narrow cañon with walls going straight up for a thousand or two thousand feet.

This is the record of a trip made last autumn, the route covered being a triangular one of about twelve hundred miles, from Denver through Buena Vista, Leadville, Glenwood Springs to Grand Junction, which is close to the Utah line, and back east again over the Rainbow Route through Delta, Montrose, Gunnison, Salida, Cañon City, to Pueblo, and then north through Colorado Springs to Denver.

Starting from Denver at the western edge of the great rolling plains of the Mississippi and Missouri basins, a short fifteen miles brings the motorist to the entrance of the Rockies through Bear Creek Cañon, on a beautiful road winding at various heights above the water. A short distance up the cañon is wonderful Red Rock Park and the Cave of the Titans. The park consists of a number of enormous dark red rocks, several hundred feet in height, rising abruptly from the lower slopes of Mount Morrison.

Through a forest of quaking aspens on the Black Mesa

Continuing on up Bear Creek Cañon, the road leads over Kenosha Pass, where the first range is crossed, and then drops down again upon a vast plateau, fifty miles across and surrounded on all sides by snow-capped peaks, and known as South Park, with an elevation of about nine thousand feet.



In the cañon of the Grand River above Glenwood Springs looking up toward castellated crags

The road leading out of South Park goes up over Trout Creek Pass, and then down the winding cañon of Trout Creek until Buena Vista is reached, in the broad valley of the Upper Arkansas River. And Buena Vista is rightly named. To the west rise abruptly the towering peaks of the Collegiate Range, forming part of the Continental Divide, with Mount Princeton abreast and Mount Harvard and Mount Yale to the northward. Looking far to the north one can just make out the tops of Mount Elbert and Mount Massive, the two highest mountains of the range. To the eastward lies the Park Range, fringing the western edge of South Park, with Buffalo Peak rising majestically in the foreground. Far off to the south, looking down the valley, can faintly be discerned the Sangre de Cristo Range, the most wonderful of all.

From Buena Vista the way goes up the valley to Twin Lakes, nestling at the base of Twin Peaks, with Mount Elbert on one side and Mount Massive on the other. From here it is a long but gradual climb into Leadville, one of the famous mining towns of the West, with the distinction of being the highest city in America, having an elevation of considerably over ten thousand feet.

After a short climb from Leadville, Tennessee Pass, which crosses the Continental Divide, is reached. After leaving the pass the road winds along the side of the Eagle River Cañon, several hundred feet above the river, to the mining town of Redcliff. Leaving Redcliff the road ascends sharply up the side of Battle Mountain. Here are the mining camps of Gilman and Minturn, literally glued to the sides of the cliff. After leaving Battle Mountain the cañon opens out into a valley, and the road drops once more to the level of the river. A few miles further on is the valley of the Grand River. The road continues westward through this valley, fringed on both sides with towering, weather-beaten cliffs of soft rock

Yesterday and today meet on a narrow trail

"The Speedometer of Permanent Accuracy"

Its mechanism is extremely simple.

Its centrifugal governor has four balance weights so sensitive that they respond to the slightest increase of speed.

This centrifugal principle of the Corbin-Brown is the same as that applied to the regulation of engines.

It insures absolute regularity of revolution regardless of temperature.

It is as accurate during the zero of Christmas as during the torridity of July.

Its few parts operate with practically no friction and therefore do not wear. The

CORBIN-BROWN SPEEDOMETER

records speed accurately from low mileage to high.

Its hand is steady; its odometer absolutely dependable.

Every Corbin-Brown is calibrated by hand and tested to absolute accuracy before being sent out.

Each is built of specially hardened steel and brass, and with the precision of a high grade watch.

The Corbin-Brown Speedometer for Motorcycles is constructed along the same lines as the Corbin-Brown for Automobiles.

It is calibrated up to 80 miles and records low mileage just as accurately as high.

For Motorcycles—3-inch dial—registering 80 miles. Price $15.00

Write for Catalog

THE CORBIN SCREW CORPORATION DIVISION
(The American Hardware Corporation)
223 High Street NEW BRITAIN, CONN.
Branches: New York, Chicago, Philadelphia.
Makers of the famous Corbin Coaster Brakes for Bicycles and Motorcycles.

Helps Your Car to Keep Its Good Looks

Mobo Auto Cleanser will keep that new automobile always bright and lustrous.

It will not make a 1914 model out of an old car. But use **Mobo** when you first clean the car you buy, and keep on using it, and your auto will always keep its good looks.

Mobo is a velvety, vegetable-oil soap that removes travel stain and all sorts of grease and dirt. It contains elements that feed varnish and paint.

It will not dull or scratch the smoothest surface. Use **Mobo** with that assurance.

Easy to use. **Mobo**, plain water, a sponge and a little action, get results. Prove it for yourself. You'll be glad you did.

Mobo is sold in small and large cans, half-barrels and barrels, by most supply dealers. Write for booklet, "How to Keep an Auto Clean and Bright."

John T. Stanley
Maker of Fine Soaps
632 West 30th St., New York

LEE TIRES

Part of our Spring Mill Factory

Miles and miles of service. Miles and miles of smiles. Why?

Better materials — finer rubber, stronger fabric.

Better making — every **Lee Tire** is cured by the correct up-to-date process, which can be used by our competitors only for a small percentage of their product, because their costly older equipment would need to be discarded.

But the greatest advance of all in solving your tire problem is the

LEE Puncture-Proof *PNEUMATIC* TIRE

—a resilient tire that protects you absolutely against punctures, by its special steel-disc-in-rubber-cushion construction.

6056 miles each from 54 tires a total mileage of 327,007

without a single puncture or inner-tube replacement is the report of one truck owner using **Lee Puncture-Proof Tires.**

Write for Booklet "D."—on **Lee Puncture-Proof Tires.**

Our Stores: 835 Seventh Avenue, New York City; 103 Massachusetts Avenue, Boston; 225 North Broad Street, Philadelphia; 1233 Michigan Avenue, Chicago; 3567 Lindell Boulevard, St. Louis

Pacific Coast Distributors: CHANSLOR & LYON MOTOR SUPPLY CO. Los Angeles, San Francisco, Spokane, Seattle, Portland, Fresno

LEE TIRE & RUBBER CO.
CONSHOHOCKEN, PA.
J. Ellwood Lee, Pres.

Smiles at Miles

Near Palisades in the Cañon of the Grand River between cliffs ranging in color from light yellow to the deepest red

Sky Line Drive, which runs along the top of a narrow ridge overlooking Cañon City

In Phantom Cañon, near Cripple Creek, showing Window Rock ahead

formation, continually changing in color from light yellows and browns to the deepest red.

The road runs down the Grand River Valley for thirty or more miles, with ever-changing scenery, across the lava beds at Dotsero, through sagebrush six feet high, with the mesalike cliffs on each side, until suddenly, without any warning of what is coming, the motorist rounds a corner into the narrow Cañon of the Grand River. The road is cut out of the solid rock, and the wall of the cañon rises straight above for a thousand or more feet, topped with battlements and towers of rock.

At the end of the cañon is Glenwood Springs, one of the summer resorts of the West.

THE BLACK MESA AND MONARCH PASS

LEAVING Glenwood Springs, the cañon opens out into a valley again with high cliffs at the sides, worn by the weather into many queer and fascinating shapes and structures. After passing through the towns of Rifle and De Beque, following the river, another and vaster cañon is reached, differing entirely from the one above Glenwood Springs. Here the walls are wider apart, rising higher but not quite so precipitously, and are intersected by numerous other cañons opening into it. This cañon continues for about twenty-five or thirty miles, and then opens out again into a broader valley, near the mouth of which is Grand Junction.

At this point the return trip begins, as by the time Grand Junction is reached the mountains have been pretty much left behind.

Toward the southeast the route winds along up the valley of the Gunnison River, the headwaters of which are famous among Coloradoans for its incomparable trout fishing.

The valley soon narrows into a precipitous cañon, where the road winds along the upper edge, at times two thousand feet above the river. Then the road leaves the brink of the cañon for a few miles, and winds up the side and over the top of the Black Mesa, about ten miles across, at an elevation of ten thousand feet. The descent to the water level is gradual.

Beyond Gunnison it is a climb to Monarch Pass, crossing the Sangre de Cristo Range of the Continental Divide. Monarch Pass crosses the Divide at an altitude of over twelve thousand feet, the highest point attained on the entire trip.

The descent from Monarch Pass is rapid to the town of Salida, on the Arkansas River. From Salida the highway continues down the beautiful valley of the Arkansas to Cañon City.

Thirty miles to the north lies the famous mining city of Cripple Creek, the road to which leads up through Phantom Cañon of Four Mile Creek.

ROYAL GORGE AND THE SKY LINE DRIVE

ANOTHER trip, and much shorter than to Cripple Creek, is along the road from Cañon City to the top of the Royal Gorge. Looking down into the gorge from the top, one can just barely make out the railroad at the bottom, so far down that it looks little larger than a thread winding along the edge of the river.

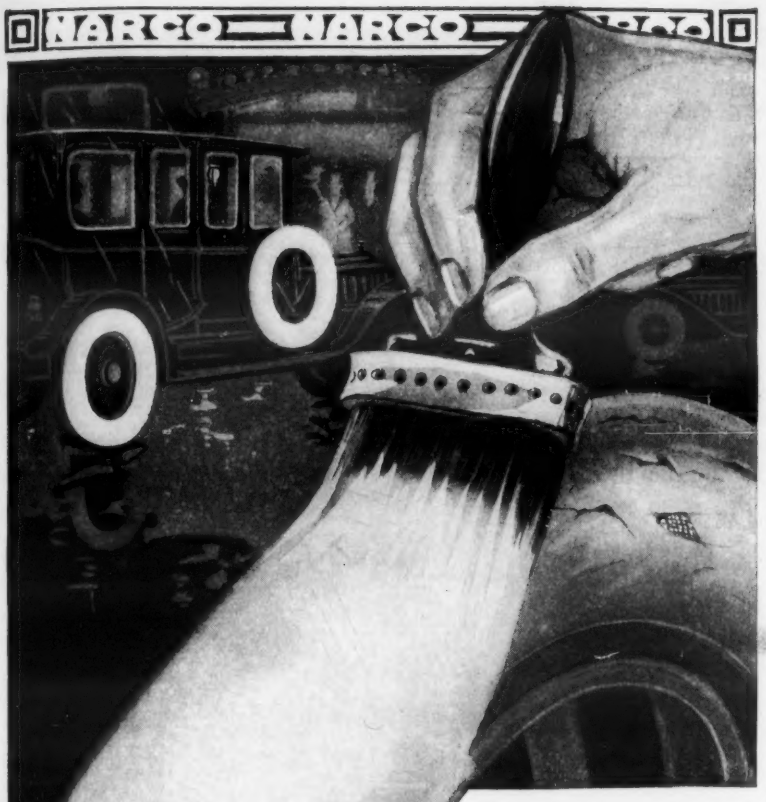
At Cañon City also is the famous Sky Line Drive, running along the top of a narrow ridge overlooking the city for several miles, from which one can look out over the mountains and plains for miles and miles in every direction. This is also a remarkable piece of road engineering, built entirely by convict labor.

From Cañon City the road continues east for forty miles to Pueblo, located at the edge of the foothills. At Pueblo the Great North and South Highway is reached, connecting with Colorado Springs and Denver.

A scene below Glenwood Springs, on the way to Grand Junction

In Eagle River Cañon, westward beyond Tennessee Pass

Looking up the Eagle River from the Battle Mountain side



Insures Tire Safety-

Lengthens Tire Life

In Rainy or Snowy Weather when roads are wet moisture is constantly soaking through the cuts and breaks in the outer rubber coating of the tires, into the cotton plies beneath—rotting the fabric—shortening tire life and paving the way for blow-outs and rim-cuts. Protect them with

TRADE MARK

TIRENEW

Prevents Tire Decay

a liquid, unvulcanized rubber compound with a base of pure gum—it protects and preserves the tire from the injurious action of moisture, oil and light, thoroughly waterproofs the fabric and ***makes the tires look like new.***

In Fair Weather

the tires need Tirenew. Even though there may be no moisture to injure the fabric, there is oil, and besides light and air have a deteriorating effect on rubber—they devitalize it—take its life. Tirenew protects from the deteriorating effect of light, air and oil—lengthens their life. ***Makes tires look like new.***

Once Each Week

A coat of Tirenew applied once each week while your car is in use will add 20 to 30 per cent to the life of the tires. It is easily applied. It protects and waterproofs the tires—makes them safer and more satisfactory and gives the car a smarter appearance.

If your car is going into storage apply a generous coat of Tirenew. It will protect the tires and prevent storage deterioration, so that they will be in first class condition when you take the car out in the spring.

Ask At Your Garage

Many Garages include Tirenewing in their caretaking service, for a small additional charge. Most others will give your tires a weekly coat of Tirenew if you ask them.

Buy a box of ½ gallons. If your dealer can't supply you, we can.

A Trial Can

Send 25c in stamps and your dealer's name for a trial can—contains enough to Tirenew one tire. Apply it to your spare tire for its protection and appearance. State which color you want—tire gray or pure white.

NATIONAL RUBBER COMPANY

4404 Papin Street, St. Louis, Mo.

The Borland Electric

ELEGANCE DURABILITY

1913 Coupe $2700
Front or Rear Drive

The Borland Electric is *the* car for your wife and you

For appearance, satisfaction, comfort, safety, convenience and *mileage* the Borland is the most convincing electric known—our 1913 Models cater to the advanced ideals and demands of the public.

If you do not happen to own a car—or even if you have one or more gasoline cars—you will find an ever-ready, absolutely reliable Borland Electric car necessary.

The Borland is the car you want in going to and from your office—your wife will use it daily in shopping, making calls, riding through the parks, and taking the children out for an airing.

Business and Professional Men's Electric Roadster, $2550
Speed, 35 miles per hour

Seven New 1913 Models

Absolutely perfect construction eliminates repairs; General Electric motor furnishes ample power; 6 speeds forward and three reverse; Exide battery, completely equipped; solid or pneumatic tires; everything the best; the secret of Borland superiority is *construction.*

Besides models illustrated we offer: Brougham, $2500; Coupe, $2900, either front or rear drive: Limousine, $5500; 1500-lb. Delivery Truck, open body, $2100; closed body, $2250.

Write at once for new catalog fully illustrating and describing in detail the beautiful line of Borland 1913 models. It's the car for the wife and you.

The Borland-Grannis Company

2636 Michigan Avenue Chicago

To Dealers:

Send for full information regarding complete line of 1913 Model Borland Electric cars. Choice territory open—write or wire quick for agency terms

FREE CATALOG COUPON

THE BORLAND-GRANNIS CO.,
2636 Michigan Avenue, Chicago

Without obligation on my part, send me Catalog describing 1913 Models Borland Electric Cars.

*Name*_____

*Address*_____

Fifth Avenue, the Great Motor Way of New York City

On this proudest of the thoroughfares of America the motor processions, one up and one down, flow unbrokenly past each other every hour of the day and many hours of the night. This is a scene to make understandable the remark of a writer in this issue that a test of skill as a driver is to pilot a car successfully from the Washington Arch to Central Park

The Beneficent Automobile

By LEONARD HATCH

THE automobile has long served as a butt for the gibes of those who make gibing a profession or for those who are merely envious. It has been averred that the automobile saps the purses of those who can ill afford so great an expenditure for pleasure. Even the habiliments and faces of those who ride have not escaped the jokesmith and the student of society. But there is another side, and with the automobile becoming a commonplace of locomotion, it must not be denied or overlooked.

As an incentive to travel, first of all, the motor car has justified itself. Those to whom even the Pullman or private car was an insufferable bore have found new zest in the untrammeled flight through the open air. One is not tied to the time-table, nor confined to the ball-and-chain progression caused by terminating lines or obligatory changes. One goes onward when he chooses and stops only when it pleases him, assuming that machinery fulfills its apportioned task. You may pause at the attractive wayside inn for lunch or press onward toward the metropolis. You may stop and take your fill of some rare vista. In short, you may follow the whim of the instant. And, best of all, you are tied to no fixed route. This advantage becomes apparent at home and in Europe, where the tourist has year after year been following the beaten trails. Now he may—and does—go prospecting and exploring nooks and crannies of a country that strikes his fancy. It may not be the cheapest way to travel, but one may lay the matter of expense aside in discussing the motor car as a boon to mankind. To those who can afford it, it opens fresh opportunity and widened scope in travel, withal giving it a new flavor.

Moreover, it grants the individual new intimacy with his home region. It gives him, in a way, a sort of bird's-eye knowledge of some section which he can cover quickly. The automobile can strike out along radial lines at least four times as long as those which the horse can traverse at one jaunt. Thus one may get a knowledge of the country on a large scale. He may know half his State without losing the sense of semi-intimacy.

Wholly unrelated to this, but perhaps no less valuable a boon, is the chance which the automobile gives to the mechanic mind. A certain type of person is apparently born with an interest in machinery, throughout his life "wanting to see the wheels go round," and loving to tinker when they stop. Imagine such a man before the automobile came. Conceive of the broker or lawyer gradually growing wealthy, longing for some outlet for his instinctive zest in machinery, and finding none. He could not borrow the disabled lawn mower from his gardener and tinker away at it; that would hardly do. As a result he was half-starved for that particular food. With the motor car, all this has changed. He himself can oil and wrench and clamp and hammer and pump to his heart's content, or he can merely stand by and give orders to his mechanic. Far too much pity is wasted upon the man by the roadside delving into the recesses of his refractory car. At least half the time he is enjoying himself. And, incidentally, we may mention that the automobile has crammed down the throats of the nonmechanical minded a vast deal of information concerning machinery which they would never have acquired otherwise.

Most important of all is the way in which the automobile has lured into the open those who are associated with the stuffy comings and goings of that vast body vaguely termed "society." The "idle rich," from an existence which took them out of doors too infrequently, are now brought into communion with Nature in all her hours and moods.

Take, for example, the matter of the dawn. Those to whom the dawn is but a name—a symbol for use in poetry or rhapsody—have been educated of late by the automobile and the tour therein. To avoid travel in noonday heat, many of those folk who for years have lain dreaming or snoozing, from sunrise to breakfast, now rise as soon as

Night's candles are burnt out, and jocund day
Stands tiptoe on the misty mountain tops,

and go flitting away in their car across the waking countryside. The ribbon of road, in its endless quest for the horizon, unrolls swiftly before the scudding machine. Hills, forests, meadows, all steeped in that first delicious freshness, glide by on either hand. The buoyancy of flight is enhanced by that hour which proves, in actuality as well as phrase, a "smiling morn." And this world of dew-besprent loveliness is what the slug-abed used to consider mere stupid country in the days before the automobile tempted him from slumber. And as his car bears him more slowly through town or city he catches a glimpse, as it were from behind the scenes, of his fellow men at dawn. Clough paints the picture well:

But as the light of day enters some populous city,
. . . . . .
He that goes forth to his walks, while speeding to the suburb,
Sees sights only peaceful and pure; as laborers settling
Slowly to work, in their limbs the lingering sweetness of slumber;
Humble market carts, coming in, bringing in, not only
Flower, fruit, farm, store, but sounds and sights of the country
Dwelling yet on the sense of the dreamy drivers; soon after
Half-awake servant maids unfastening drowsy shutters
Up at the windows, or down, letting in the air by the doorway.
Schoolboys, schoolgirls soon, with slate, portfolio, satchel,
Hampered as they haste, those running, these others maidenly tripping;
. . . . . .
Meantime above purer air untarnished of new-lit fires;
So that the whole great wicked artificial civilized fabric—
All its unfinished houses, lots for sale, and railway outworks—
Seems reaccepted, resumed to Primal Nature and Beauty.

One could write another paragraph discussing whether these attempted hexameters are real poetry. But, despite his lack of mellifluence, the poet shows us the magic wand at work. Somehow the first light of the sun seems to transmute all this into a rude morning pageant of homely simplicity, transforming what is commonplace:

Clothing the palpable and familiar
With golden exhalations of the dawn.

So the daily miracle is worked. To the automobile gratitude is due. For it whirls across the scene many a one hitherto a stranger to it all.

That's Pantasote *on that first car!*

"That fresh, bright, *clean* looking Top!

"Don't you *see* the difference?

"Don't you see how the ordinary Tops look—rough and *unkempt?* The dirt and stains can't be removed—they are imbedded in the weave of the material.

"*Pantasote* can be cleaned as readily as glass, consequently it always looks fresh. It's the material of quality—it's in keeping with a fine car because it *stays* new.

"I've owned Tops covered with other materials. They were 'thrown in to boot' with cars. Now I know the difference and when I buy a car I say *Pantasote* Top for me and nothing else.

"I wash my *Pantasote* Top when I wash the car—and I've never failed yet to remove grease spots—just as dirt and dust wash off.

"It's the Top that makes your own car look shabby. Put a genuine *Pantasote* Top on it and you'll not be ashamed to take your place with any other 'high-brow' car on the street. Be sure you get the brass *Pantasote* label—it should be on the front of the Top—that proves it's genuine."

That's what the wise automobilist says—he *knows* that real satisfaction comes from using a Top that not only stands severe wear and is permanently waterproof, but always looks clean and new.

Send today for your copy of "The X-Ray On Automobile Tops." Describes fully *all the different kinds* of Top materials, it explains how they are made and just how they differ. After you have read the "X-Ray" book you will know just what you are buying when you buy *Pantasote*. Send for that copy today!

THE PANTASOTE COMPANY
No. 50 Bowling Green Building
NEW YORK

Solar Lamps

For Quality Cars

If you want lamps that mark the limit in *illuminating efficiency*—lamps that you can put on your car and then *forget*, insist on a *throughout-equipment* of **SOLARS.**

Solar Lamps are known for their *quality* from one end of the country to the other. More high grade cars are equipped with them than any other make of motor lamps. Such widespread popularity tells its own story.

Fourteen years of manufacturing experience and fourteen years of unquestioned leadership are back of the great line of Solar Lamps which are built by the largest makers of acetylene, oil and electric motor lamps in the world.

The finished products of master lamp builders, *each lamp* has its *own duty to perform.* And it does it just enough better than all others to sustain the *Solar reputation.*

The **Solarclipse**, the only lamp with a means of suppressing that *dazzling glare* common to all other powerful headlights, is only one of the numerous practical, time-tried innovations that have made Solar Service *exceptional.*

Lamps to meet *all* requirements of *all* motor-driven vehicles.

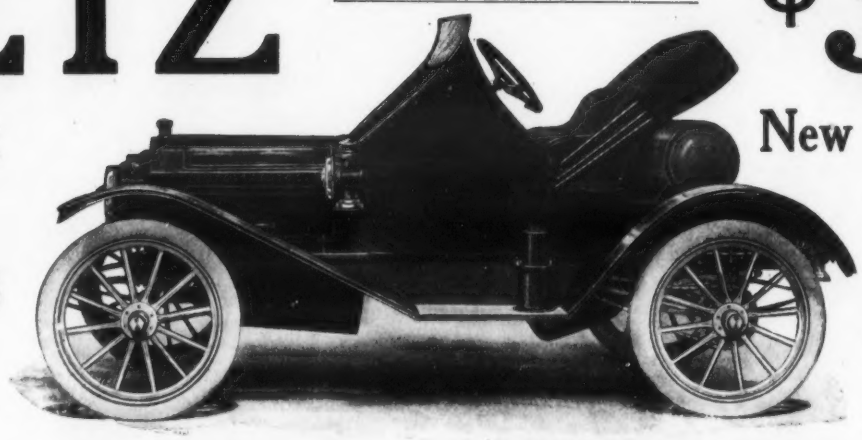
If You Haven't Seen Our New Catalog, Write For One.

The Badger Brass Mfg. Company
Kenosha, Wis. **New York City**

METZ "SPECIAL" $395

They Have Said all Along:
"It Can't Be Done"
But
HERE IT IS

The Best Roadster Car in the World at a Really LOW Price



New 1913 Model

COMPLETELY EQUIPPED as here shown and described below

LEFT-HAND DRIVE
CENTER CONTROL
FOUR-CYLINDER MOTOR, water-cooled
HIGH TENSION IGNITION, Bosch magneto
ARTILLERY WHEELS
CLINCHER TIRES, best quality

This is the Car That "Had to Come"—The Public Demanded It

FOR BUSINESS OR PLEASURE—FOR TOWN OR COUNTRY—LOW IN PRICE BUT HIGH IN EFFICIENCY—MOST ECONOMICAL CAR ON THE MARKET TO OPERATE

IN presenting to the public the **METZ "Special"** at the phenomenally low price of $395.00 we wish particularly to emphasize the fact that this innovation has not been brought about by slashing car quality or depreciating value, but purely as the result of scientific, economical manufacturing, in conjunction with what is probably the lowest possible percentage of overhead cost.

The question has been repeatedly asked: "Who will be the **First** to give the people of this country a Strong, Reliable, Sane, **Really Low-Priced Car?**"

And today the **METZ Company,** in placing on the market the **METZ "Special"** at **$395.00,** answers this question so effectively and so emphatically that it is bound to make an indelible impression upon the automobile industry of the entire world.

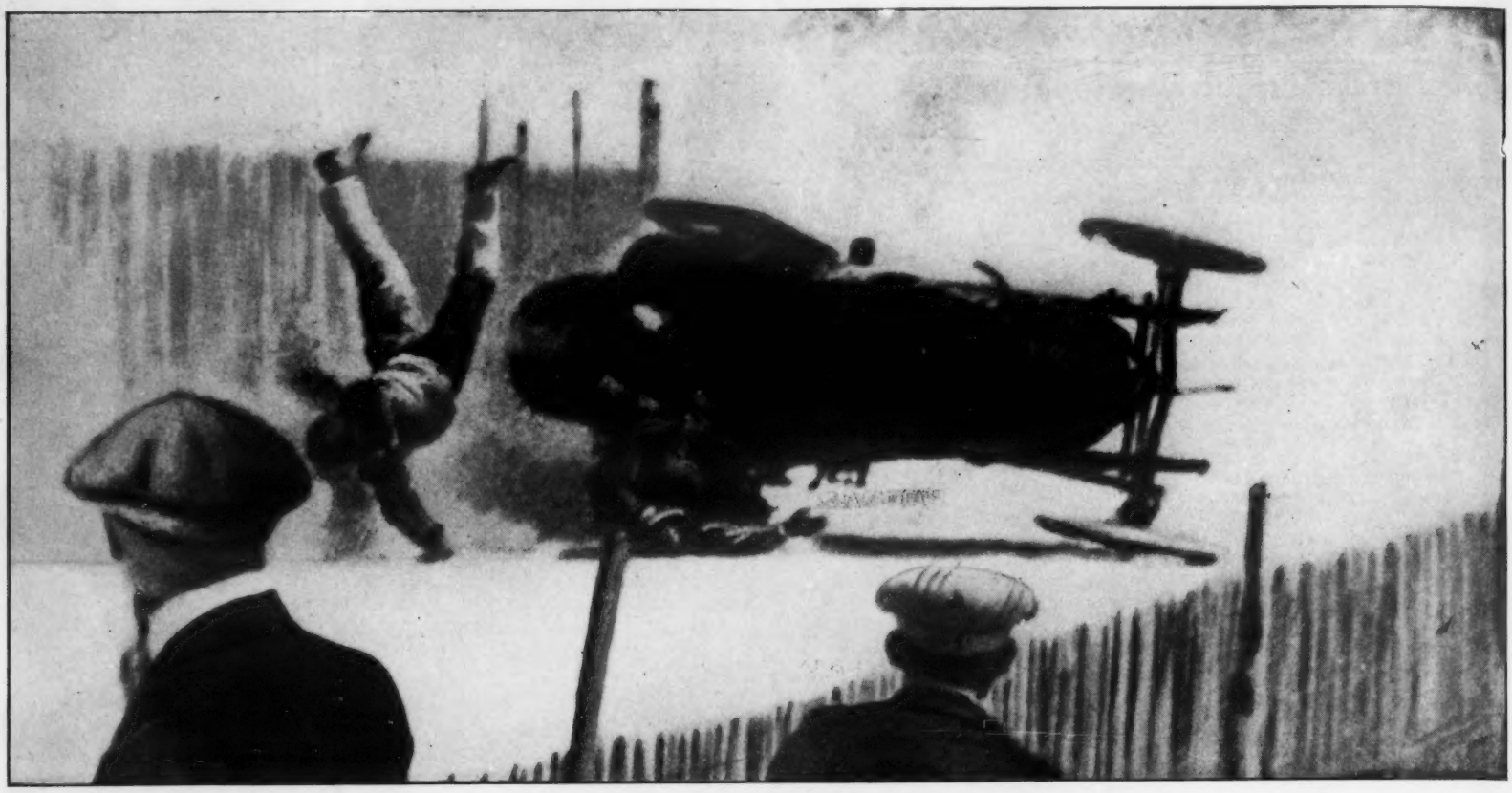
The **METZ "Special"** is a strictly high grade, guaranteed car. 22½ horse power, four-cylinder water-cooled motor, high tension ignition system, with Bosch magneto, center control, and left-hand drive.

It is equipped with standard artillery wheels, best quality clincher tires, extension top, wind shield, five lamps, gas generator, horn, tire pump, tools, etc. It makes from 5 to 50 miles per hour on high gear, travels 28 to 32 miles on 1 gallon of gasoline, 100 miles on a pint of lubricating oil, 10,000 to 12,000 miles on a single set of tires, and climbs hills as fast as **any** stock car made, no matter what its horsepower or price.

WRITE FOR ILLUSTRATED CATALOG, BOOK C.

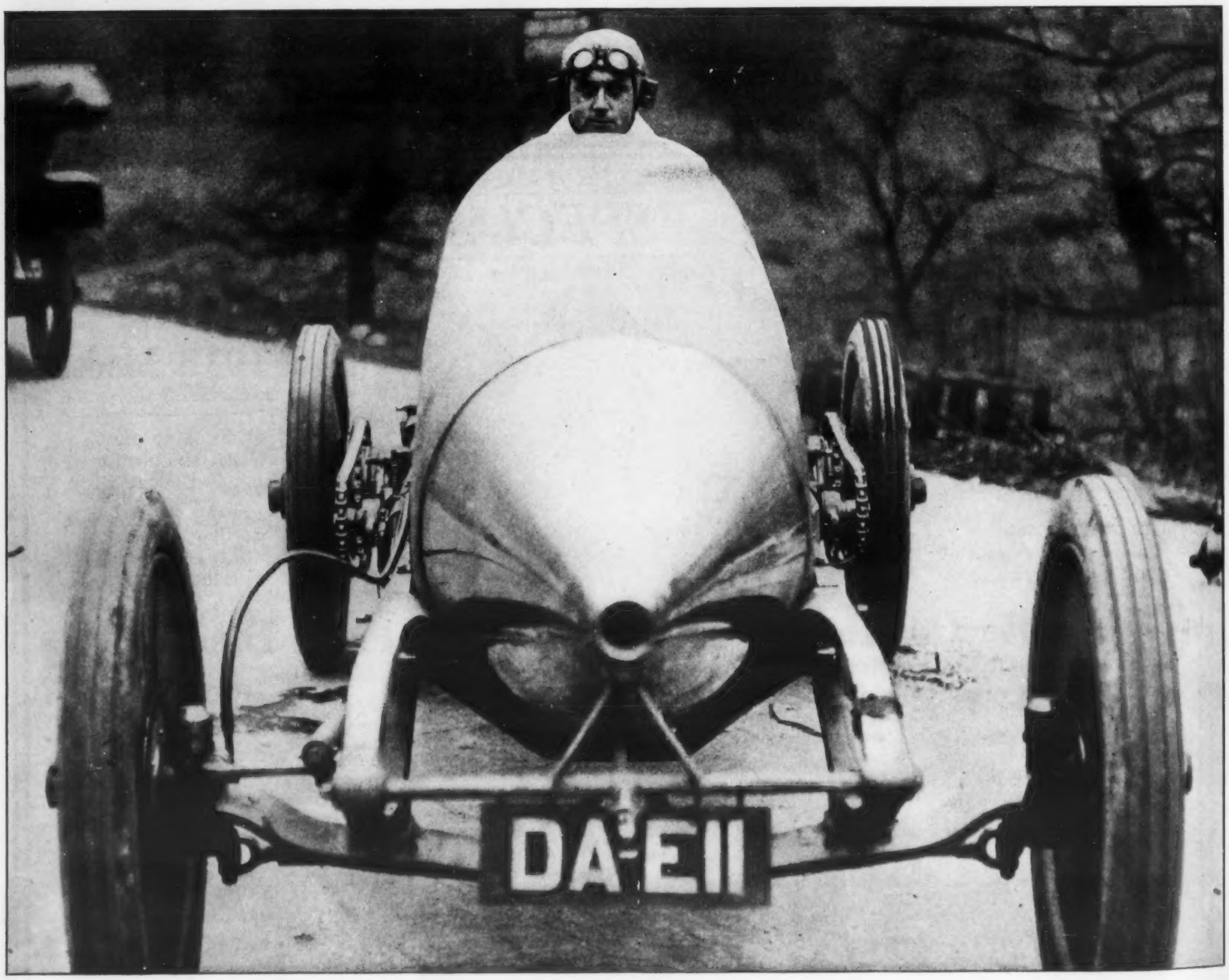
METZ COMPANY—WALTHAM, MASS.

DEALERS.—This is the biggest proposition that has yet been presented to you; send for particulars.



A Racing Accident in France

Both the driver and the mechanician were thrown, the former falling beneath the overturned car, the latter going head first against a fence. Fortunately, and curiously enough, neither of the men was injured seriously. The camera has caught the most sensational moment of the mishap and kept it for an enduring record

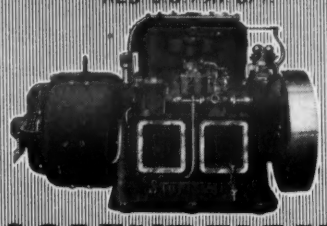


An Automobile Oddity

It is modeled after a torpedo, in the belief of its English designer that it would have a torpedo's speed. The machine did possess good racing qualities and attracted much attention at the English motor track where its feats were performed. To Americans it recalls other freak cars which have appeared occasionally on the race courses

Sturtevant

REG. U.S. PAT. OFF.



GASOLENE ELECTRIC GENERATING SETS

FOR use wherever an independent electric plant is desired—on the farm, the country estate, in the garage, the machine shop or factory and on the yacht.

They are complete self contained units of the automobile type, simple to maintain and unfailing in operation.

No special foundation being required, the installation is simple and easy, while the necessary operating attention may be given by the owner or chauffeur.

Built in various sizes
Fully described in catalog No. 20511

B. F. Sturtevant Company, Hyde Park, Boston, Mass.
and all principal cities of the world.

Don't worry over the next turn

Tree-hidden country roads and traffic-crowded city streets have no terrors for the motorist who uses the INFALLIBLE

Jericho

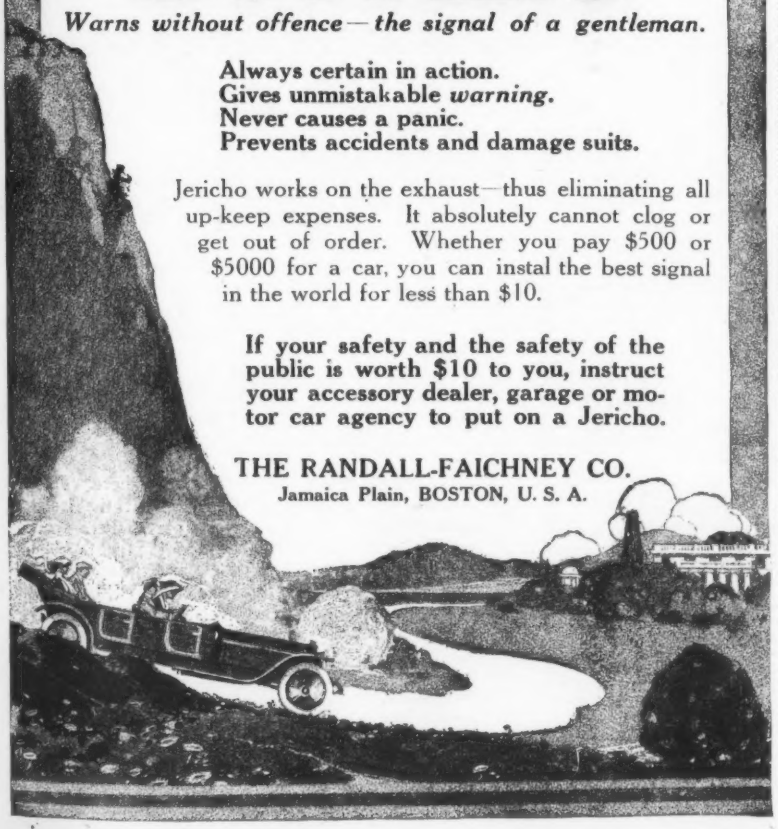
Warns without offence—the signal of a gentleman.

Always certain in action.
Gives unmistakable *warning*.
Never causes a panic.
Prevents accidents and damage suits.

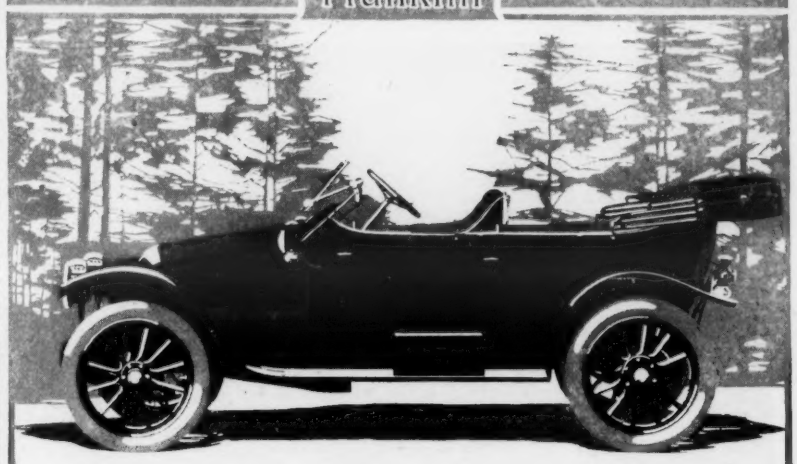
Jericho works on the exhaust—thus eliminating all up-keep expenses. It absolutely cannot clog or get out of order. Whether you pay $500 or $5000 for a car, you can instal the best signal in the world for less than $10.

If your safety and the safety of the public is worth $10 to you, instruct your accessory dealer, garage or motor car agency to put on a Jericho.

THE RANDALL-FAICHNEY CO.
Jamaica Plain, BOSTON, U. S. A.



Franklin



Franklin Big Six—"38"

Franklin Big Six Model D, 38 H. P. 5 Passenger Touring or 4 Passenger Torpedo-phaeton, $3600; regularly equipped with

Entz Electric Starter and Lighting System

Franklin Six cylinder models are equipped with the Entz Electric Starter and Lighting System. The Entz is a real self starter with really original features. It is permanently connected—the engine does not stall. The Entz System is the last word in self starters. No other system equals it for simplicity and efficiency.

Men accustomed to securing high efficiency will be interested in the economy of operation obtained through Franklin principles of construction. These are: Direct air cooling, light weight, full elliptic springs, wood frame and large tires. These principles are directly responsible for the following unusual results:

Lower Cost for Tires

8,000 to 10,000 miles per set is the average obtained by Franklin owners. This is the result of light weight on large tires and because the tires are not pounded by rigid, unyielding construction.

Lower Cost for Gasoline and Oil

Franklin cars average from 20 per cent to 35 per cent more miles per gallon of gasoline, due to the exceptional efficiency of the Franklin direct air cooled motor. Franklin cars average from 400 to 600 miles per gallon of oil without smoke, due to the Franklin re-circulating oiling system.

Longer Life to the Car

Franklin cars give good service for 6, 8 and even 10 years. They travel faster in the long run and ride easier because of the shock absorbing properties of full elliptic springs, a resilient wood frame and flexible drive system.

Models and Prices

5 passenger, 6 cylinder, 38 H. P. Touring Car $3600	Little Six, Touring, 5 passenger, 6 cyl. 30 H. P. . . $2900
4 passenger, 6 cyl. 38 H. P. Torpedo-phaeton . . $3600	Little Six, Victoria-phaeton, 2 passenger, 6 cyl. 30 H. P. $2900
7 passenger, 6 cylinder, 38 H. P. Touring Car $3850	5 passenger, 4 cylinder, 25 H. P. Touring Car $2000
7 passenger, 6 cyl. 38 H. P. Limousine $4850	2 passenger, 4 cylinder, 18 H. P. Runabout $1650

Write for the Book You Want

(1) "An Air Cooled Convert", by Hiram Percy Maxim
(2) "Why They Bar Franklin Out of Economy Contests"
(3) "An Analysis"—of the causes of Franklin low operating cost
(4) "Winning the Desert Race"
(5) "Six Weeks in a Motor Car"
(6) "Franklin Little Six—The First Six-Thirty"
(7) "The Franklin Catalogue"
(8) "Winter Driving"
(9) "The Entz Electric Starter and Lighting System"

FRANKLIN AUTOMOBILE COMPANY
21 Franklin Sq Syracuse N Y

Across the Columbia River by ferry in central Washington

The Automobile on the Frontier

By RANDALL R. HOWARD

ON A RECENT midsummer evening certain boosters out on the edge of the Salt River Valley in Arizona were highly disgruntled. They had planned great things for that night. And their plans had taken root, had flowered beautifully, and the harvest was just within plucking distance—when Nature snapped her finger.

The boosters looked out again from under cover. The elements were in a fury. No blue sky or blue hills; sapling trees along the "plaza" bent like wagon bows; a funnel of dust flowing from the basement of the to-be hotel across the street; the "medicated" artesian water in the concrete-lined basin in the new public square whipped into an angry little sea. Outside, the wind and dust rasped against one's cheek like sandpaper. The boosters knew—for they had fought valiantly, as long as there was hope, against the uprooting of the big banquet tent, already filled with tables and strung with electric lights centering about the spot where the Governor was expected to stand when he emitted the oratorical keynote that was to stamp indelibly the new irrigation town on the frontier map.

An hour later, the landscape had resumed its wonted calm, after the passing of a midsummer dust flurry common to all flat, arid districts. But the mischief was done.

But was it? If the time had been five years ago, out in this Western State that supports one and eight-tenths persons to the square mile, and where there are few railroads and where the towns are small and far apart, no earthly power could perhaps have saved the booster banquet. But this is a new day on the frontier—the day of the automobile.

To continue our story: A hundred or more boosters in surrounding communities, from fifteen to thirty-five miles distant, merely waited until sundown and the subsiding of the storm. Then they went out to their respective garages, "and saddled up," as one of them expressed it to me, and were soon skimming the desert roads. The banquet was late in starting, and it was transferred to the low shed that had been the eating house of the former irrigation constructionists. But the banquet was held. And Governor Hunt and other notables were there from the State Capitol at Phœnix to pledge faith in the swaddling-clothed city.

In the midst of the shoulder-to-shoulder and purse-to-purse good feeling, the electric lights suddenly blinked. The automobile again came to the rescue, one of the guests turning the glare of his electric headlights on to the two long banquet tables. When the last State and community praises were sung, the boosters dispersed to their automobiles. Soon the dark and flat desert road was aglitter with fifteen or twenty pairs of fiery eyes, some of which would speed away thirty-five miles during the small hours of the morning. The sight doubtless would have been marvelously bewildering to the spooks of those mysterious ancients who populated and irrigated this same potentially fertile desert hundreds of years ago, but it is doubtful if a single one of the assembled Arizona boosters thought the event at all unusual, so swiftly has the automobile come to be accepted as an essential accessory of the frontier.

NEW DAYS, NEW WAYS

SHIFT the next automobile scene to interior Oregon, one of the largest remaining railroadless frontiers of the West.

A few years ago the citizens of a small railroad town on an isolated border of the State were in a flurry of excitement. The small boys thought an unheralded circus had dropped. The wiser ones stroked their Western whiskers and waited—for there was a contradiction of terms.

The first unloaded paraphernalia from the special express cars was common-enough looking to frontier eyes—evidently the grub, the bedding, the tents, and the camping outfit of a prospecting party. But what did the prospecting party want with the next discovered cases and cases of gasoline, and the big cans of lubricating oil? These fluids had no thought-of association with pack burros, cowboy horses, freight wagons, or stagecoaches. The next unloaded consignment of miscellaneous bits of extra parts of "machinery" was still more confusing. And the height of excitement came when several padded automobiles were revealed.

A cowboy driving a car on a big cattle ranch

But the automobiles did not explain. They tangled the puzzle. For what did a rough-and-tumble prospecting party want with an automobile? And what kind of prospecting party could use a whole carload of gasoline chariots?

The mystery took another turn when a silent, middle-aged man assumed command. But—as the metropolis newspapers later uncovered—it was no mystery. It was the simplest and most natural thing in the world. The visitor was Robert S. Lovett, the executive head of one of the great railway systems of the world, the wearer of the mantle of the late E. H. Harriman. It was an automobile scouting tour through the then largest area in the United States without a railroad.

If the same trip had been planned five years previously—if it could have been planned—this busy New York executive would have been lumbered about in jolting stagecoaches.

Some weeks after the silent Lovett party had criss-crossed the great Oregon frontier, a second automobile procession appeared, bringing Louis W. Hill. A rival railroad council had decided to make mighty war for a big slice of the Oregon frontier.

There was no chance for the Hill party to become lonesome, or to miss the way, for every village in the mapped course organized vigilante committees to herd together all its automobiles. And the whole boosting band war-whooped out to meet the visitor—approaching as near as advisable to the limits of the rival town, which rival town was working its frontier wits to hang on to the railroad-directing genius as long as possible. On the return home-going trip, the swiftest and most dare-devilish local auto would set the pace and mark the way, and glide over in an hour and a half what a few years ago would have been a good stiffening day's jaunt for the saddle horse or the stagecoach. Later—after the nearly all-night banquet—and after the orators had paragraphed the pioneering stories, and breathed fire into the glorious hopes of the future—the auto parade started out more leisurely to tour and point out the surrounding resources and wonders.

One might go on and on reciting what the automobile means to the frontier booster—the man whose life and religion is to dream out blue prints of what will be; and then to incite and beckon on advancing civilization.

ON A CATTLE RANCH

THE goggled genus Booster is everywhere. For instance, the writer happened to visit the isolated little metropolis of the Harney country, where are the remaining largest cattle ranches of the north Pacific Coast. The jovial and tanned cattle king of that part of the State, who suggested a tour of the immense valley, volunteered one of his two automobiles for the trip. But since he was busy at his city real-estate office for the day, he sent along a substitute to drive the car—a young cowboy wearing the regulation cowboy hat, shirt, and boots. The other members of the party were the county assessor, an official of the local United States Land Office, and the lively and fluent secretary of the city commercial club. The automobile was rushed around and through the 30,000- and 50,000-

How crank-case heat affects lubrication.

When your car is in action the lubricating oil heats up and thins out.

Its real lubricating value is then put to the test.

Oils not of the highest quality thin out to the danger point and lose their ability to protect the moving parts. The action of the motor is restrained. Destructive friction starts.

Many a motorist owes his repair bills to the failure of his lubricating oil under the heat of service.

The quality of the several grades of Gargoyle Mobiloil provides in advance for this heat of service. It assures efficient lubrication under the heat and mechanical conditions in each type of motor.

The partial chart on the right shows the correct grade of Gargoyle Mobiloils for 111 cars. Our complete chart, covering 400 cars, will be mailed you on request.

Gargoyle Mobiloils were produced after careful study by an organization recognized as the authoritative leaders in scientific lubrication—the Vacuum Oil Company.

In quality, Gargoyle Mobiloils set a world standard.

By the gallon they cost a little more than ordinary lubricating oils. But their wearing quality makes them actually lowest in cost per mile—to say nothing of the lengthened life that they will give your motor.

GARGOYLE

Mobiloil

A grade for each type of motor

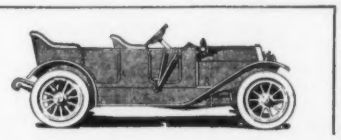
The various grades, refined and filtered to remove free carbon, are:

Gargoyle Mobiloil "A" **Gargoyle Mobiloil "D"**
Gargoyle Mobiloil "B" **Gargoyle Mobiloil "E"**
Gargoyle Mobiloil "Arctic"

They are put up in 1 and 5 gallon sealed white cans, in half-barrels and barrels.

All are branded with the Gargoyle, which is our mark of manufacture.

They are handled by the higher class garages, automobile supply stores, and others who supply lubricants.



A guide to correct Automobile lubrication

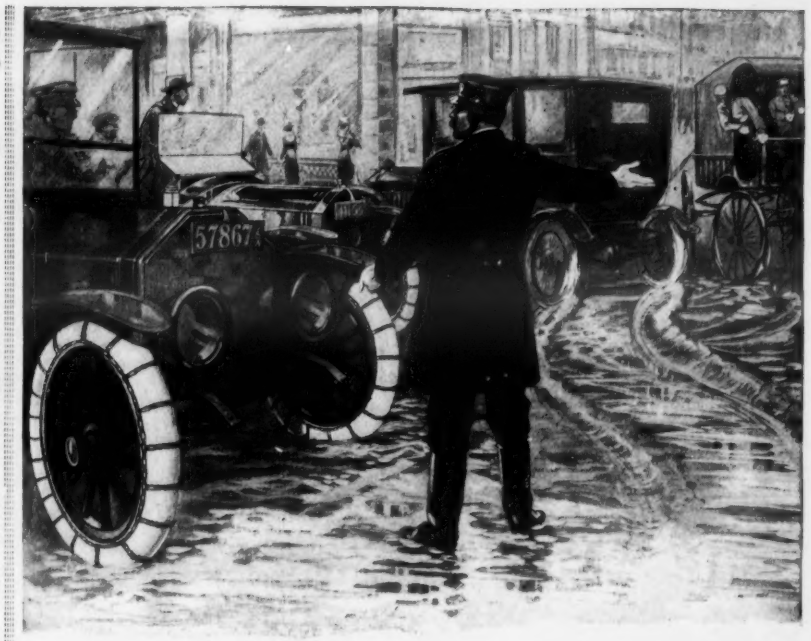
Explanation: In the schedule the letter opposite the car indicates the grade of Gargoyle Mobiloil that should be used. For example, "A" means "Gargoyle Mobiloil A." "Arc." means "Gargoyle Mobiloil Arctic." For all electric vehicles use Gargoyle Mobiloil A. The recommendations cover both pleasure and commercial vehicles unless otherwise noted.

MODEL OF CARS	1908		1909		1910		1911		1912	
	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter
Abbott Detroit	...	...	...	...	A	Arc.	A	Arc.	A	Arc.
Alco	...	...	Arc.	Arc.	Arc.	Arc.	Arc.	Arc.	Arc.	Arc.
American	A	E	A	Arc.	A	Arc.	Arc.	Arc.	A	Arc.
Apperson	E	E	A	Arc.	Arc.	Arc.	Arc.	Arc.	Arc.	Arc.
Atlas	A	A	E	E	E	E	E	E	A	A
" Com'l	...	...	E	E	E	E	Arc.	Arc.	A	A
Austin	A	...	A	Arc.	A	Arc.	A	Arc.	A	Arc.
Autocar (2 cyl)	B	A	A	Arc.	A	Arc.	A	Arc.	A	Arc.
" (2 cyl) Com'l	...	...	A	Arc.	A	Arc.	A	Arc.	A	Arc.
" (4 cyl)	A	E	A	E	A	E	A	Arc.	A	Arc.
Benz	...	...	A	A	A	A	A	A	...	A
Bergdoll	...	...	...	...	A	Arc.	A	Arc.	Arc.	Arc.
Brush	A	A	A	E	A	E	A	E	A	E
Buick (2 cyl)	A	A	A	A	A	A	A	A	A	A
" (4 cyl)	A	Arc.	Arc.	Arc.	Arc.	Arc.	A	Arc.	A	Arc.
Cadillac (1 cyl)	A	E	B	A	...	...	...	...	...	...
" (4 cyl)	A	E	Arc.	Arc.	Arc.	Arc.	Arc.	Arc.	Arc.	Arc.
Cartercar	A	E	A	A	E	A	E	Arc.	A	E
" Com'l	B	A	A	A	A	E	A	Arc.	A	Arc.
Case	...	...	...	...	...	...	A	A	A	Arc.
Chadwick	A	A	A	A	B	A	A	Arc.	A	Arc.
Chalmers	...	...	Arc.	Arc.	Arc.	Arc.	A	Arc.	Arc.	Arc.
Chase	B	B	B	B	B	B	B	B	B	B
Cole	...	...	...	...	Arc.	Arc.	A	Arc.	Arc.	Arc.
Columbia	A	E	A	E	E	E	A	A	A	A
Columbia Knight	...	...	...	...	...	...	...	...	A	A
Couple Gear	A	A	A	A	A	A	A	A	A	Arc.
Croxton-Keeton	...	...	...	...	A	Arc.	A	Arc.	Arc.	Arc.
Daimler	A	E	A	E	A	E	A	E	A	A
Daimler Knight	...	...	...	...	...	...	A	A	A	A
Darracq	A	E	A	E	A	E	A	E	Arc.	Arc.
De Dion	B	A	B	A	B	E	B	A	B	A
Delahaye	A	A	A	A	A	A	A	A	A	A
Delaunay-Belleville	B	A	B	A	B	A	B	A	B	A
Elmore	A	A	A	A	Arc.	Arc.	Arc.	Arc.	Arc.	Arc.
E. M. F.	...	...	Arc.	Arc.	Arc.	Arc.	Arc.	Arc.	Arc.	Arc.
Fiat	A	E	B	A	A	A	B	A	A	A
Flanders	...	...	...	...	E	E	E	E	Arc.	Arc.
Ford	A	E	E	E	A	Arc.	E	E	E	E
Franklin	B	E	B	E	B	A	A	Arc.	A	Arc.
" Com'l	B	E	B	A	B	A	B	A	A	Arc.
Gramm	...	...	...	...	...	...	A	Arc.	A	Arc.
Gramm-Logan	...	...	A	Arc.	A	Arc.	...	...	...	...
Hewitt (2 cyl)	...	...	A	A	A	A	A	Arc.	...	...
Hewitt (4 cyl)	A	A	A	E	A	E	A	Arc.	E	E
Hudson	...	...	...	...	Arc.	Arc.	A	Arc.	A	Arc.
Hupmobile	...	...	Arc.	Arc.	Arc.	Arc.	Arc.	Arc.	Arc.	Arc.
International	B	A	B	E	B	E	B	B	B	A
Interstate	...	...	A	E	A	E	A	Arc.	A	Arc.
Isotta	A	E	A	A	A	A	A	A	A	A
Itala	...	...	A	A	A	A	A	A	A	A
Jackson (2 cyl)	A	A	A	A	A	A	...	...	...	...
" (4 cyl)	A	E	A	E	A	Arc.	A	Arc.	A	Arc.
Kelly	...	...	...	...	...	...	Arc.	Arc.	Arc.	Arc.
Kissel-Kar	A	E	A	E	A	E	A	Arc.	A	Arc.
" Com'l	...	...	...	...	...	...	Arc.	Arc.	Arc.	Arc.
Kline Kar	...	...	...	...	Arc.	Arc.	Arc.	Arc.	Arc.	Arc.
Knox	B	E	B	A	B	A	B	A	B	A
Krit	...	...	...	...	A	A	A	A	A	A
Lambert	A	E	A	A	A	Arc.	A	Arc.	A	Arc.
" Com'l	A	A	...	...	...	...	A	E	A	E
Lancia	B	A	B	A	B	A	B	Arc.	B	Arc.
Locomobile	A	E	Arc.	Arc.	Arc.	Arc.	Arc.	Arc.	Arc.	Arc.
Lozier	A	A	A	A	Arc.	Arc.	Arc.	Arc.	Arc.	Arc.
Mack	A	A	A	E	A	E	A	E	E	E
Marion	A	A	A	E	A	E	A	A	E	Arc.
Marmon	B	E	Arc.	Arc.	A	E	A	Arc.	Arc.	Arc.
Matheson	A	E	Arc.	Arc.	Arc.	Arc.	A	A	A	Arc.
Maxwell (2 cyl)	E	E	E	E	E	E	E	E	E	E
" (4 cyl)	...	...	E	E	E	E	Arc.	Arc.	Arc.	Arc.
Mercedes	A	E	A	E	A	E	A	E	A	E
Mercedes Knight	...	...	...	...	...	...	A	A	A	A
Mercer	...	...	...	...	A	Arc.	A	Arc.	A	Arc.
Minerva Knight	...	...	...	...	...	...	A	A	A	A
Mitchell	A	E	A	A	Arc.	Arc.	A	Arc.	A	Arc.
Moon	A	E	A	E	A	E	Arc.	Arc.	Arc.	Arc.
National	A	E	A	Arc.	A	A	A	A	A	A
Oakland	...	...	A	Arc.	A	E	A	A	A	Arc.
Oldsmobile	A	E	A	E	A	E	A	Arc.	A	Arc.
Overland	A	E	A	E	A	E	Arc.	Arc.	Arc.	Arc.
Packard	E	E	Arc.	Arc.	Arc.	Arc.	Arc.	Arc.	Arc.	Arc.
Panhard	A	E	A	E	A	E	A	E	A	Arc.
Panhard Knight	...	...	...	...	...	...	A	A	A	A
Peerless	Arc.	Arc.	Arc.	Arc.	Arc.	Arc.	Arc.	Arc.	Arc.	Arc.
Pennsylvania	A	E	A	E	A	E	A	A	...	...
Pierce Arrow	A	E	A	Arc.	Arc.	A	A	Arc.	A	Arc.
" Com'l	...	...	...	...	...	...	Arc.	Arc.	Arc.	Arc.
Pope Hartford	A	E	A	E	Arc.	Arc.	Arc.	Arc.	Arc.	Arc.
Premier	A	E	A	Arc.	A	Arc.	A	Arc.	A	Arc.
Rambler	A	E	A	A	A	A	A	Arc.	Arc.	Arc.
Rapid	A	A	A	A	A	A	A	Arc.	Arc.	Arc.
Regal	...	...	A	A	A	E	A	Arc.	A	E
Renault	A	E	A	Arc.	A	Arc.	A	Arc.	A	Arc.
Reo	A	A	A	A	A	E	A	Arc.	A	Arc.
Royal Tourist	A	E	A	E	Arc.	Arc.	Arc.	Arc.	Arc.	Arc.
Selden	A	E	A	E	A	E	A	E	Arc.	Arc.
Simplex	A	E	Arc.	Arc.	Arc.	Arc.	Arc.	Arc.	Arc.	Arc.
Speedwell	...	...	A	Arc.	Arc.	Arc.	A	Arc.	A	Arc.
Stanley	D	D	D	D	D	D	D	D	D	D
Stearns	A	E	A	A	Arc.	Arc.	A	Arc.	A	Arc.
Stearns Knight	...	...	...	...	...	...	...	...	A	A
Stevens Duryea	A	E	Arc.	Arc.	Arc.	Arc.	Arc.	Arc.	Arc.	Arc.
Stoddard Dayton	...	...	E	E	Arc.	Arc.	A	A	A	A
Stoddard Dayton-Knight	...	...	...	...	...	...	...	...	A	A
Thomas	A	E	E	E	E	E	E	E	A	E
Walter	A	E	A	E	A	E	Arc.	Arc.	Arc.	Arc.
Welch	A	E	A	E	A	E	...	...	...	...
Welch Detroit	...	...	...	...	...	...	A	E	...	...
White (Gas)	...	...	...	...	Arc.	Arc.	Arc.	Arc.	Arc.	Arc.
" (Steam)	D	D	D	D	D	D	D	D	D	D
Winton	A	E	E	E	Arc.	Arc.	Arc.	Arc.	Arc.	Arc

VACUUM OIL CO., Rochester, U. S. A.

BRANCHES: DETROIT Ford Building; BOSTON 49 Federal St.; NEW YORK 29 Broadway; CHICAGO Fisher Building; PHILADELPHIA 4th & Chestnut Sts.; INDIANAPOLIS Indiana Pythian Bldg.

Distributing warehouses in the principal cities of the world



"There's Where You Are Wise!

That Other Fellow is a Menace to Everyone's Safety"

Nine-tenths of all automobile accidents are caused by skidding and by foolish dependence on rubber alone.

In these days of crowded streets and congested traffic, the motorist who does not take precaution to guard against every possibility of disaster is ***next to criminal.***

> "The ever-present danger that is quite as much of a terror to the experienced driver as it is to the novice is ***skidding.*** There is nothing that makes a man lose his nerve so thoroughly or dread a repetition of the experience so keenly as a bad skid that ends in a broken wheel against a curb, or that makes matters far worse by "side swiping" a moving trolley car. To feel the car start to slide from under you, aiming directly at the nearest obstruction, despite all manipulations of the wheel and brakes—well, once is too often."

Weed Anti-Skid Chains

VS.

Slipshod Traffic

Traffic policemen, by the hundreds, interviewed in all the large cities throughout the country, express the unanimous opinion that their work would be greatly reduced; that nearly all ***skidding accidents would be eliminated*** if motorists would take the precaution of always carrying WEED CHAINS, and putting them on when the roads and pavements are wet, slippery and uncertain, or covered with snow.

Some of these ***guardians of public safety*** go so far as to say that the time is not far off when State Legislatures will make ***the use of Weed Chains compulsory,*** for the protection of life and property.

Make Safety Yours

Take no chances. Fully equip your own car with WEED CHAINS and ***insist,*** for your own protection, that other drivers do the same.

On the Rear Tires

they afford perfect traction and adequate brake control.

On the Front Tires

they act as ladders to enable the front wheels to easily climb out of mud-ruts, car tracks and all uneven places in pavements or roads, always insuring absolute steering control, eliminating all chance of the front wheel skid.

If you haven't a set of ***WEED CHAINS***, or if you have a pair for the rear tires only, ***get a full equipment now.*** Delay is dangerous. Stop at your dealers today and ***WEED CHAIN your car to safety.***

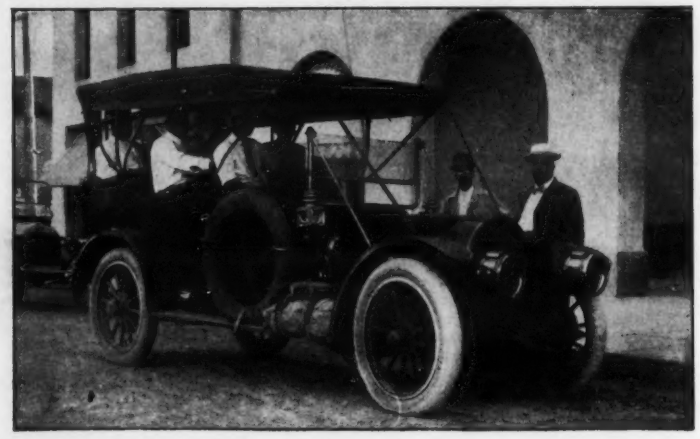
For Sale by all Reputable Dealers

WEED CHAIN TIRE GRIP CO.
28 Moore Street **New York**

acre ranches, which were exhibited as resources in the raw. The pleasant trip ended with the usual photos of grainfields, orchards, and alfalfa stacks, the cylometer registering a total of miles which would have been a prohibitive and wearing three- or four-day trip by any other means of travel.

A little more exciting was a trip through interior north-central Washington, with a party of red-apple boosters. The day was passing pleasantly, when one of the rear axles decided that its life work was done. The four men and the one woman of the party walked on about four miles to the nearest village hotel. That night we were entertained in a truly hair-stiffening fashion by a selection of first-hand bear and cougar stories, while the chauffeur rode a plow horse on to a country blacksmith who thought he could hammer life back into the broken axle. The completed job looked good, and we spun along far up into the foothills of the Cascades, before the wheel again dropped off.

This time we walked on about six miles to a little cabin in the forest reserve, where the old folks allowed the seven travelers of the night to stow themselves away in a steep blanket-partitioned attic. The next day the automobile was allowed to reflect and repent on the edge of a steep and lonely mountain grade, while another good rancher hitched his work horses to a light wagon and hauled us over the mountain to civilization. In justice to the penitence of the automobile, it should also



Governor Hunt of Arizona (standing in front) on a trip with his Cabinet

be stated that after the new axle caught up there was not the slightest trouble through a long, hard 500-mile trip.

The frontier automobile is sometimes charged up with black marks that it does not earn. The writer, in one particular instance in mind, planned to make connections at an isolated Indian reservation of the Northwest with a stage automobile making irregular trips between the railroad and a town one hundred and fifty miles interior. The stage auto passengers had decided on a night run through the desert. But the auto, when it reached the Reservation, was voted to be very sick. So we all begged beds for the night in the Indian boys' dormitory.

Next morning the auto wheezed and coughed and balked, refusing to respond either to auto-suggestion or auto-compulsion. Neither the driver nor any of the five passengers seemed to know anything about auto-physiology. So the auto dissecting was done according to directions supplied by a book owned by a local gasoline motor enthusiast. We spent half a day in stripping the thing down to its skeleton. By the middle of the afternoon we had found places to fasten all the parts back.

"Now it oughta go," the owner, who was suffering from a bad stomach and the loss of sleep, concluded.

But the auto wouldn't go.

Just then another automobile came along. The new man was persuaded to hitch us on behind. Our sick auto barked and stubbed along for a minute, until it got on to the magneto—then it seemed better than new. We were off about two hours before sundown for a forty-mile spurt to the first ranch. Out a few miles we slowed down for a tottering pole bridge—and our steed balked again. An Indian soon came along with a team of snorting ponies, and he had to give us a boost in order to get us off the bridge. Later a long uphill pull brought on another stubborn fit. This time we got on to the magneto by reversing and backing downhill. Then everybody pushed and raced behind to the top of the mountain.

The temptation, a little later, was too great to pass the bright fire of a freighter, so we stopped on a down slope long enough to devour all the potatoes, ham, bread, and coffee that the woman of the camp was preparing in advance for breakfast. Five miles farther the expected happened—the spark of life sputtered out. We all did our best. We dug our toes into the sand, and worked and strained and talked and sweated, out under the cold stars along the eastern slope of the Cascade Mountains. But it availed nothing. So we built a camp fire, distributed the automobile robes, and turned the automobile seats into berths.

An automobile stage covering an extensive route in central Oregon

NOVEL USES

NEXT afternoon a rescue automobile caught up. The new chauffeur opened up the corpse of our machine, fingered around for three or four minutes, took a fling at the crank hanger, and the cold thing began to spit and spat and throb. The chauffeurs exchanged places, and under the hand of the new driver there was no more trouble during the remainder of the trip.

The automobile has found novel uses on the frontier. Some months ago, for instance, if a certain automobile had been stopped out in the foothills of the Coast Mountains in western Oregon, one might have guessed that he had captured a Mexican relief expedition. But it was merely the notorious Red Auto belonging to the State of Oregon, filled with shotguns, pistols, ammunition, handcuffs, and dark lanterns, and pressed into use by Governor West in personally running down and bringing back an "honor" convict who had not responded to the faith placed in him by the young chief executive.

One must approach a stub-railway town at a "jumping-off place" on the rim of one of our remaining great frontiers to appreciate the new place of the automobile. The stub railway usually arrives at the terminal station late in the evening. Under the old-fashioned way of interior traveling you would have hurried to the stage office and promptly climbed into the best stagecoach seat. If lucky, this seat would have been on the high-up "boot" with the driver; or it might have been a backward-traveling seat in the rocking, dust-smudged inside; or even a hang-on seat on top. There were usually day stagecoaches when traffic warranted; but close competition in mail contracts often compelled night traveling.

To-day, at any interior terminal point of importance, you can go to a hotel, sleep like a white man, and start at eight or nine o'clock in the morning in a stage automobile. Before noon you usually have passed the old stagecoach that still carries the express and heavy mail and that jogged along all night with two or three changes of horses. On leaving the far interior, you may be called upon to sacrifice the last hour or so of your regular sleep. Your compensation will be the saving of a day's time, and an invigorating and appetizing early morning automobile ride of maybe from thirty to fifty miles.

AUTO FREIGHTING

THE frontier automobile suggests different things to different people. The stage driver who is in love with his work naturally remembers only the hard-luck side of automobile traveling. He can tell you the full details of all the autos that have stuck in the mud or balked on a steep grade; about those that were hauled back to the railroad behind a freight wagon; and about those that are hidden away and forgotten in a lonely sheep shed. And he will remind you that you can save perhaps from twenty to fifty per cent of your mileage money by still traveling on his stagecoach—not mentioning the time and the "six-bit" meals that you save the other way.

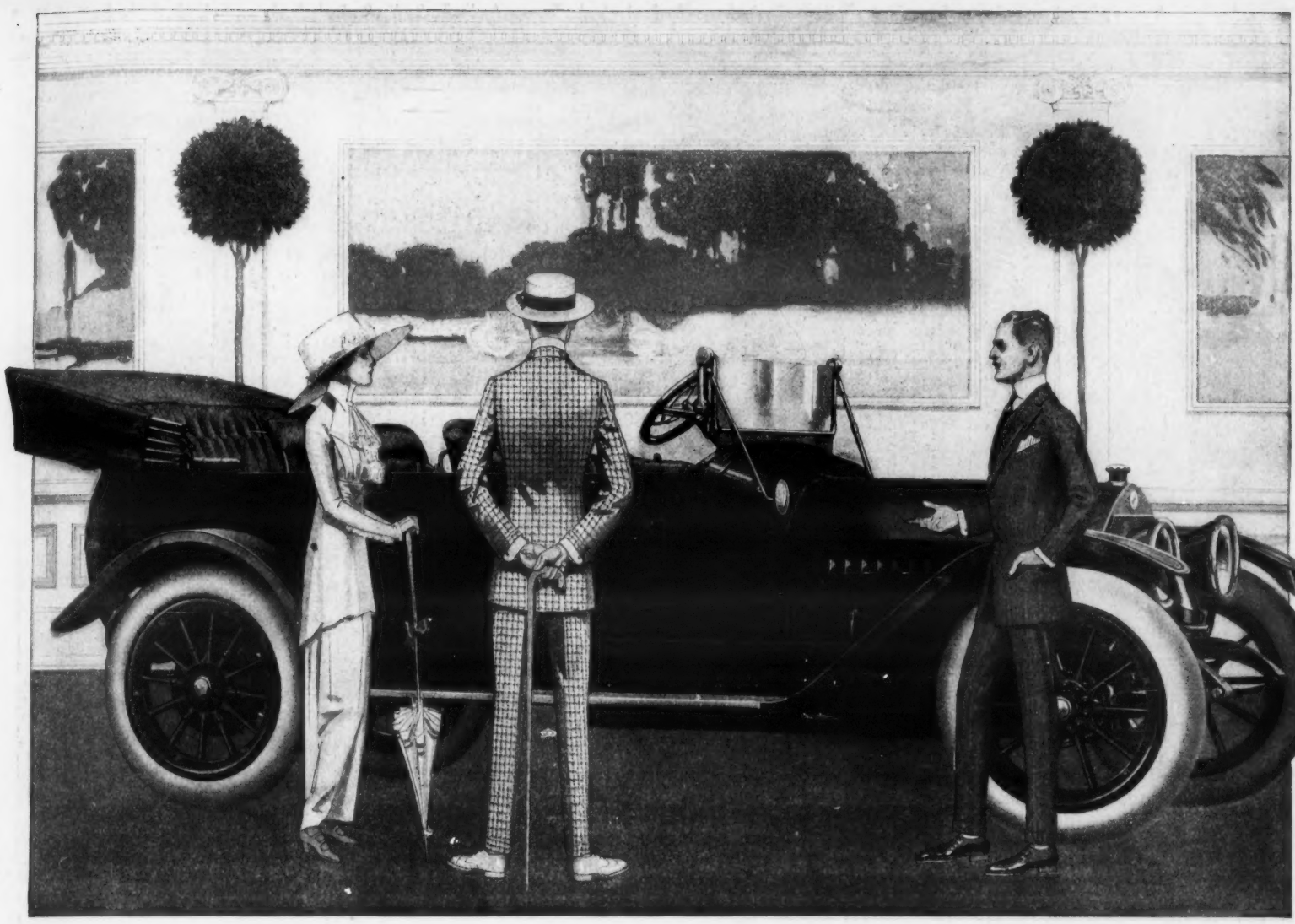
Also, there are not many frontier freighters from whom you could quote automobile boostlets. They, likewise, see handwriting on the wall. Auto freighting on the frontier is still rather new, but in a number of places auto trucks are making regular forty- and ninety-mile trips transporting fruit and ordinary freight.

The frontier railroads are perhaps not worrying, for they always get their whack both coming and going. But the writer happens to remember the testimony of a produce commission merchant in the Salt Lake country. In the old days he dodged about on branch railway lines, picking up a buggy here and there to make a dashing side trip, multiplying his gray hairs in figuring out railway connections and waiting for late trains, often skipping the smaller places, and crowding his weeks with night work and Sunday travel.

Now he owns a light automobile. He takes along two other buyers in different lines, and their cash fares pay a money dividend on the automobile investment. The commission man now does in five days what he couldn't do in seven, so the left-over two days are used in a regular week-end fishing and hunting trip in the mountains.

Camped for the night on the eastern slope of the Cascades

An accident on the trail, far from a garage



America's Greatest Touring Cars are Premier Sixes The First of the Five Leading Makers to Establish the New Price Basis for the Six was the Premier

THE public has decided that the high-class car of the future must be a Six. The Premier is one of the four makers whose six-cylinder cars has created this six-cylinder demand. Seven years production of successful sixes.

The Premier six-cylinder is not only a leader in price but in style and appointments. It is fitted with pneumatic starter, pneumatic tire inflator, independent electric lighting system, imported magneto, imported annular bearings, left hand drive, clean running boards, a cabinet mounted in the dash, providing a tool carrying compartment, gasoline fed by gravity with filling cap accessible without removing the cushions, luxurious upholstering, Turkish cushions, concealed hinges, and straight line bodies, finished with the pleasing touches which make for elegance and class.

Premier Sixes, $2735 to $4000

FULL TOURING CAR EQUIPMENT

The Premier has earned its position as one of the leaders among America's leading cars by its wonderful performance and successful showing in the most trying tours and contests each year

Manufactured by PREMIER MOTOR MFG. CO., Indianapolis

Premier Six as pilot in 1907 Glidden Tour

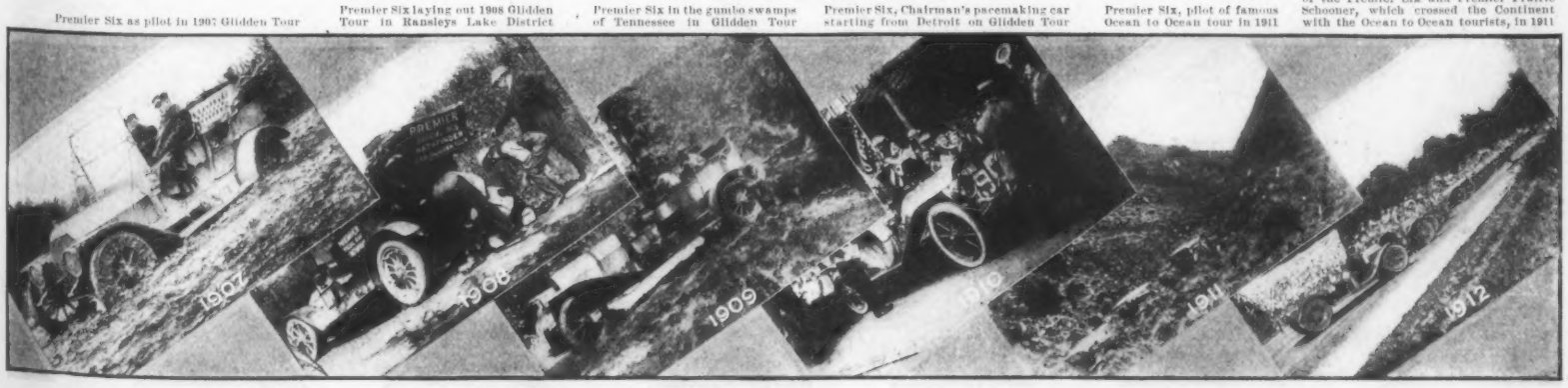
Premier Six laying out 1908 Glidden Tour in Ransleys Lake District

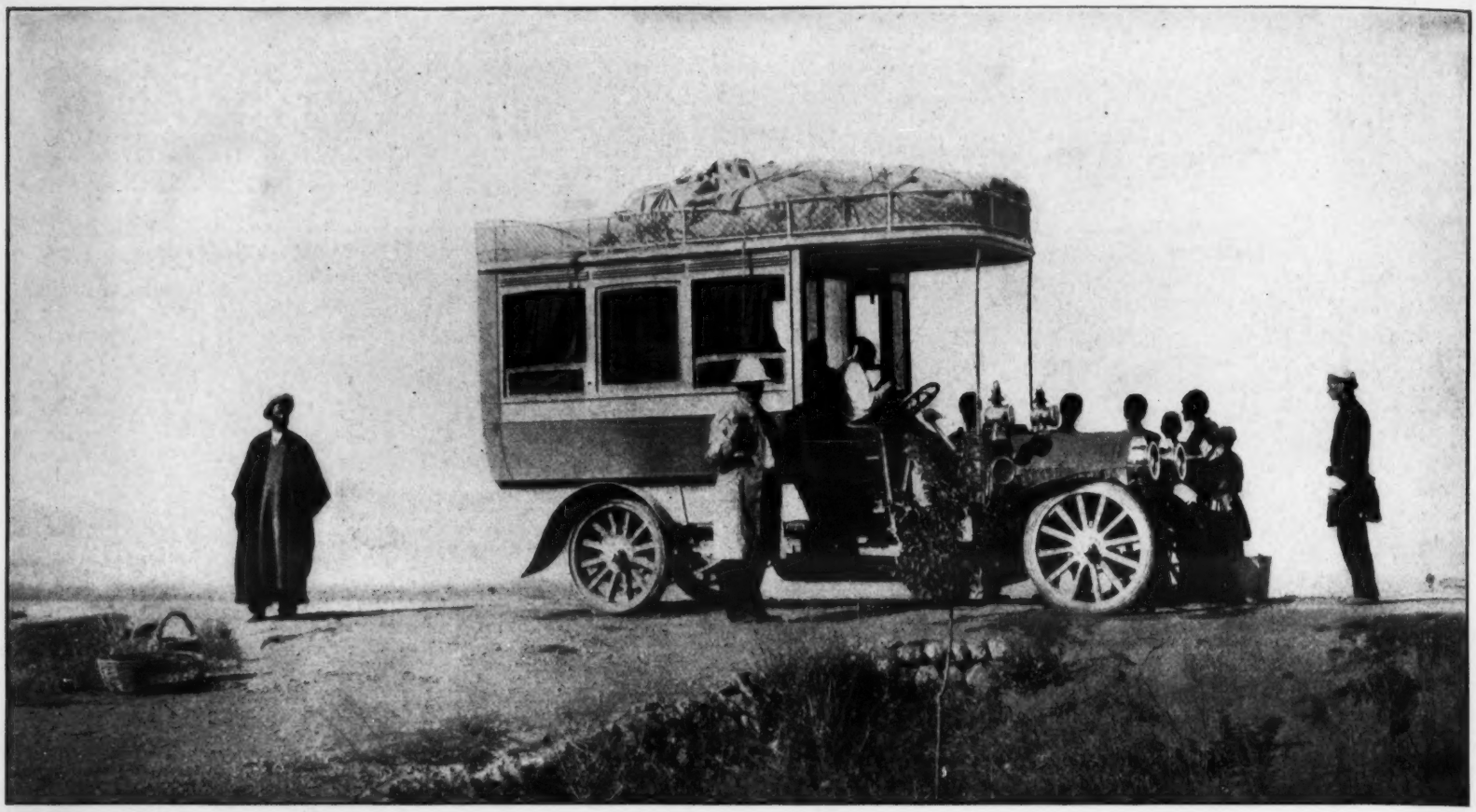
Premier Six in the gumbo swamps of Tennessee in Glidden Tour

Premier Six, Chairman's pacemaking car starting from Detroit on Glidden Tour

Premier Six, pilot of famous Ocean to Ocean tour in 1911

The start of the Indiana Four States Tour, of the Premier Six and Premier Prairie Schooner, which crossed the Continent with the Ocean to Ocean tourists, in 1911





Instead of the Locomotive

The Persian Empire has only eight miles of railroad. One of the great innovations made about a year ago was a motorbus which runs three times a week over the Russian-built road from Julfa to Tabriz. The distance is eighty miles and the journey takes half a day

To War in a Motor Car

King Ferdinand of Bulgaria in his motor car at Maritza, following in the path of his victorious army. The fighting King kept near the firing line throughout the war and found his automobile indispensable

You now drive calmly down the middle of the oiled road, on

PENNSYLVANIA Oilproof VACUUM CUP TIRES

The best of all tire improvements, added to the best of all tires—

Vacuum Cup Tires have now relieved the motor car owner of his three greatest tire troubles—the Slippery Pavement, the Endless Chain of Tire Replacements and the Oiled Road.

1. By their wonderfully successful application of the suction-cup principle they provided the one effective, guaranteed means of making skidding impossible on wet or greasy pavements.
2. By their consistent three years' record of giving service *in excess* of their mileage guarantee under all normal conditions, these tires have practically eliminated the continuous replacement abuse—and this in spite of the 500 extra miles guaranteed for them.
3. And now that the ever extending oiled road is proving increasingly disastrous to tire service, Vacuum Cup Tires are made absolutely Oil-Proof through and through—the crowning achievement of all.

Thousands adopted these tires for their guaranteed non-skid safety—more adopted them for their phenomenal mileage service—*all thinking motorists will now turn to them for their absolute, test-proved Oil-Proof quality.*

Have your dealer supply you—or write us for address of nearest distributor.

PENNSYLVANIA RUBBER CO., Jeannette, Pa.
(Reorganized February 1, 1910)

Pittsburgh, 505 Liberty Ave.
Kansas City, Mo., 514 East 15th St.
Minneapolis, 34 South Eighth St.
Chicago, 1004 Michigan Ave.
Seattle, Armour Bldg.
Detroit, 254 Jefferson Ave.
Cleveland, 1837 Euclid Ave.

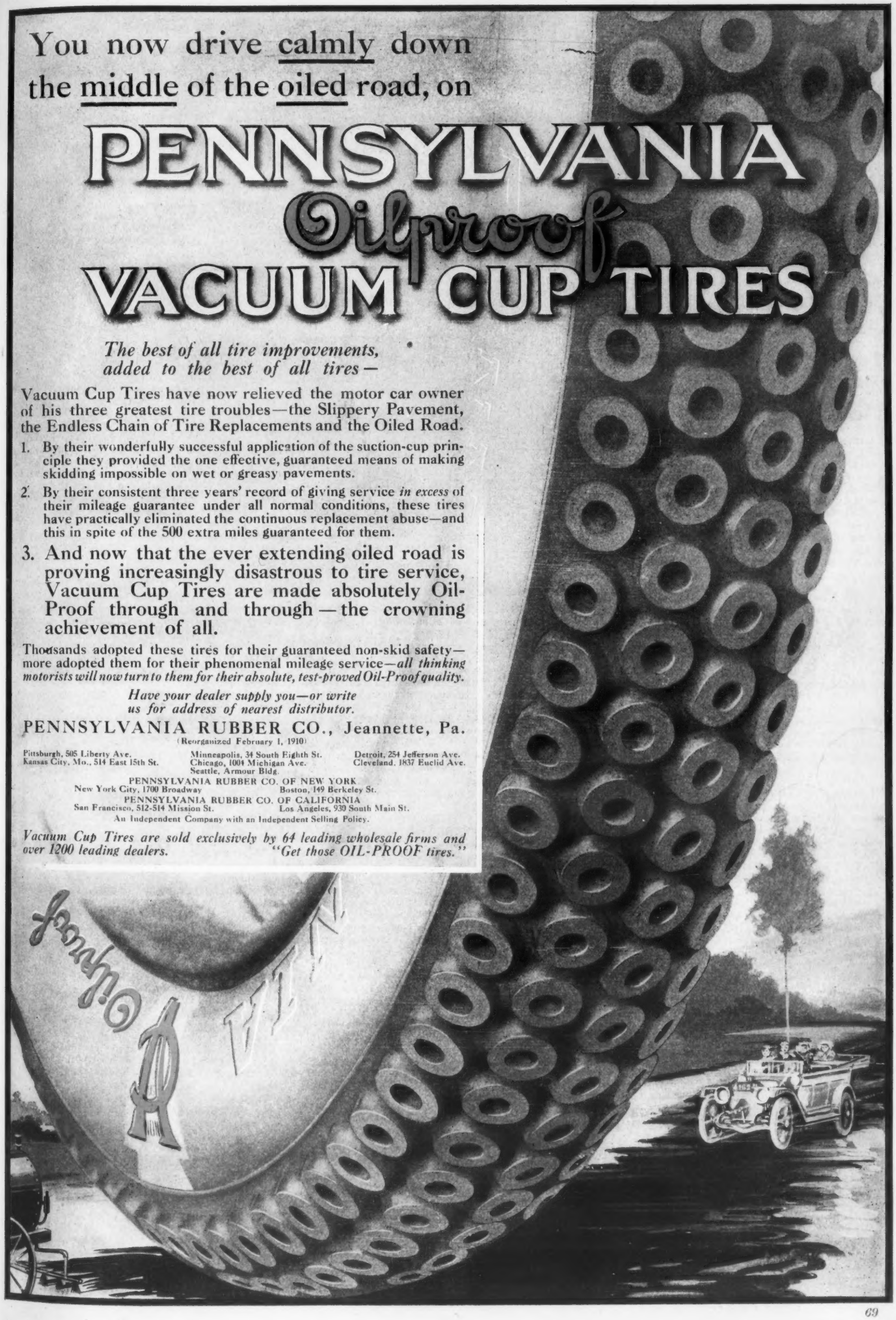
PENNSYLVANIA RUBBER CO. OF NEW YORK
New York City, 1700 Broadway
Boston, 149 Berkeley St.

PENNSYLVANIA RUBBER CO. OF CALIFORNIA
San Francisco, 512-514 Mission St.
Los Angeles, 939 South Main St.

An Independent Company with an Independent Selling Policy.

Vacuum Cup Tires are sold exclusively by 64 leading wholesale firms and over 1200 leading dealers.

"Get those OIL-PROOF tires."



The Private Garage

A Discussion of Its Problems of Construction, Appearance, and Convenient Interior Arrangement

By MAY LOUISE COOPER

WHEN the architect's blue prints of the new private garage arrive and are examined by the prospective owner, they may appear fine indeed and well executed, and when the water-color front elevation or perspective is submitted later, and even when the building itself is completed, it may be a delight to the eye. However, a number of architects putting up most beautiful private repositories for cars have neglected certain features which would be well for the prospective builder to consider and talk over with his architect.

Assuming that the exterior of the building, as shown by the plans, is satisfactory, and that there is enough room within to house the desired number of cars, one of the first questions which come up is whether or not arrangements have been made for sufficient illumination.

It seems to be a common fault with architects to be satisfied with small windows in private garages, whereas large windows to admit plenty of light are absolutely necessary if one expects to have cars washed properly or mechanical work done on them in the building. It must be remembered that the small windows make work on the car most annoying when they cast a direct, strong light on the upper portion of the car, causing dark shadows to result from the obstruction offered by fenders and other parts. The difference and advantage in having large windows are known to everyone who has borne the inconvenience of small ones. Instead of having them up near the ceiling and but a couple of feet square, these windows are placed perhaps slightly nearer the floor so as to permit rays of light to reach the under part of the car, and will be found much more desirable. Architects may consider that when the front door of a garage is open sufficient light is let in, but it must be borne in mind that one may desire to work on the car on a rainy or cold day, when it is desirable to have the front door closed. The writer has just completed a new hollow tile and stucco garage to hold one car, and it was difficult to impress the importance of large windows upon the architects, who preferred them smaller and more "artistic."

It is preferable to have the interior of the garage painted in a light color, tile or plaster being used in preference to wood paneling. White walls, as is well known, reflect the light which enters through the windows and assist in diffusing it.

UPON disposing of the problem of natural lighting, artificial lighting is next to be considered. Illuminating gas, of course, cannot be used, as fire underwriters will not permit it, and it would be extremely dangerous anyway. The only sort suitable is the regular incandescent electric light. If the garage is a small one so that one interior electric light is sufficient, this should be in the form of a drop light, either on a chandelier or hanging by a wire cord from a socket in the ceiling. If the chandelier is used it should be provided with a socket into which one end of a portable light wire can be attached so that this portable light can be used underneath the car in any position. The bulb should have a wire cage to prevent its being broken in case of dropping or being stepped on. If no chandelier is used and a single wire hangs from the ceiling, it should have a large loop held in a wooden check lock so that when desired the leader can be lengthened. In a garage equipped with a pit, while working on the transmission or lower mechanism of the car, a drop light of this sort is absolutely necessary.

A portable light arrangement should be devised for the wash rack, particularly if limousine or high inclosed body cars are to be washed.

Heating a garage in winter is a problem which proves a snag for many automobile owners. The fact that there is gasoline in the tanks of cars makes gas or stove heat very dangerous. Steam, hot water, or hot-air furnace, properly piped, is the only thing to be considered, and the only sort approved by fire underwriters. Electric heaters have not yet been perfected to the point where they are cheap enough to warrant their use.

IN CASES where the garage is quite close to the house, steam heat from the house-furnace source may be used advantageously, the fact remaining, however, that in the underground transmission of the steam to the garage radiators considerable heat will be lost, and the steam will condense or the water chill, as the case may be. This means that in order to heat the garage to a normal temperature, more steam pressure will be required than is necessary to heat the house alone, and that the furnace will burn more coal—

A beautiful garage of the type that costs as much as a dwelling

perhaps more than would be burned by an independent furnace for the garage.

A number of the newer garages have the latter sort. A small furnace is installed in an isolated section of the garage, having no communication with the interior other than that through which the steam leaders pass, usually a concrete wall. This is practically the only form of construction which fire underwriters will permit. A number of furnace manufacturers have models adopted for such use, while there are concerns which manufacture gas stoves to produce steam and hot-water heat. Of course, the latter sort prove expensive in protracted cold spells, and are intended more to take the chill from the interior of the garage overnight, when there is danger of actual freezing, rather than to keep the building at house heat throughout the winter.

While the essential reason for having a garage heated in bitter weather is to prevent water from freezing in, and damaging, the radiator, it must be borne in mind that extreme cold damages both the mechanism and body of a car. The general contracting of parts due to cold often produces a rattle in the doors, bow top, fenders, and other parts, while frequently on a cold night, if a car is run into an unheated garage and left alone to cool off, it will be found in the morning that patches of the enamel have chipped from the hood.

COLD, or rather extreme changes in heat conditions, cause the enamel on wood or aluminum bodies to crack. At first, very tiny veinlike cracks will be noticed, and, later, these get bigger and cause the enamel to chip off; hence, it is strongly recommended that the motorist arrange to keep his car in heated compartments in cold weather, rather than trust merely to antifreezing solutions. For keeping the radiator and water jackets from freezing overnight, yet without attempting to heat the room itself, there is an electric device which can be applied instantly to any car. By attaching a drop wire to one of the electric-light sockets in the wall, the other end is attached to the heater, which is in the form of a cylinder about a foot long, and contains a resistance coil. This simply can be laid on the cylinders or radiator, and when the current is turned on, the heat diffused is sufficient to prevent freezing.

Motorists who take care of their own cars frequently go to great expense for things which will never be of any use to them. Unless one has a chauffeur, or is of a decided mechanical turn of mind, a repair pit with a trapdoor is hardly necessary, for seldom does one want to get under his car. If the job is serious enough for that, a regular repair man probably will be called in.

If it is planned to keep a gasoline supply tank underground, the pump attached to it should be fitted with a hose sufficiently long to reach the tank of the car. The additional expense of a longer wire-coil hose will be saved in the course of a few months by the amount of gasoline saved from slopping and evaporation due to carrying the liquid from the pump to the car.

When building a garage to accommodate two machines, space frequently can be saved by having a front and rear entrance. This permits two cars to be driven in and out and the width of the building need not be any greater than for one car. Having a rear door means that one car can be removed without touching the other. The most economical and at the same time artistic plan of constructing a building for two machines is to arrange for the two cars to stand side by side. This will mean that the building can be approximately square. The front door placed at the upper corner of the garage permits one car to go in and out while the rear door at the lower corner allows the second car to exit and enter in the opposite direction.

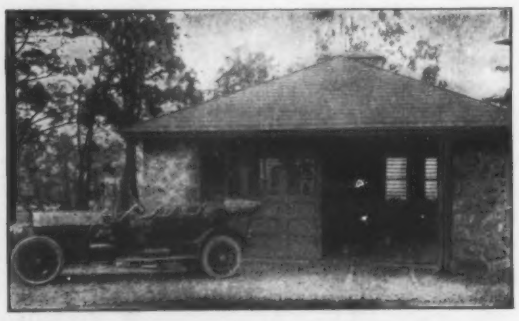
If it is desired to build a more pretentious structure than that above mentioned, perhaps a building in which the chauffeur and his family may reside, the expense naturally is much greater. In short, it will cost almost as much to build a two-story garage as to put up a regular two-story dwelling of the same size and material—fireproof hollow tile and house brick, or tile and stucco, or even frame.

An ideal two-story garage is one owned by a Columbus, Ohio, motorist. It is laid out to cover an area of 36 x 26 feet, the exterior being of red pressed brick, and the interior finish of both floors white terra cotta. The garage, which is situated at the corner of an alley, is arranged so that cars can enter and exit from two sides. A large sliding door ten feet wide forms the entrance.

THE main entrance leads to the storage space. The whole lower floor is built in a single room which is partitioned to form several different departments. A well-equipped repair pit, six feet in depth, is built to the right of the north entrance, and the wash rack and work bench are situated in the south portion. Tires and accessories are stored in a specially constructed closet beneath the stairway.

A sink with running water is attached to the far wall. There is a small door to the left of the main entrance used in passing to and from the dwelling and garage. Running north and south from the alley is another entrance at the far corner of the garage, which is also provided with a sliding door.

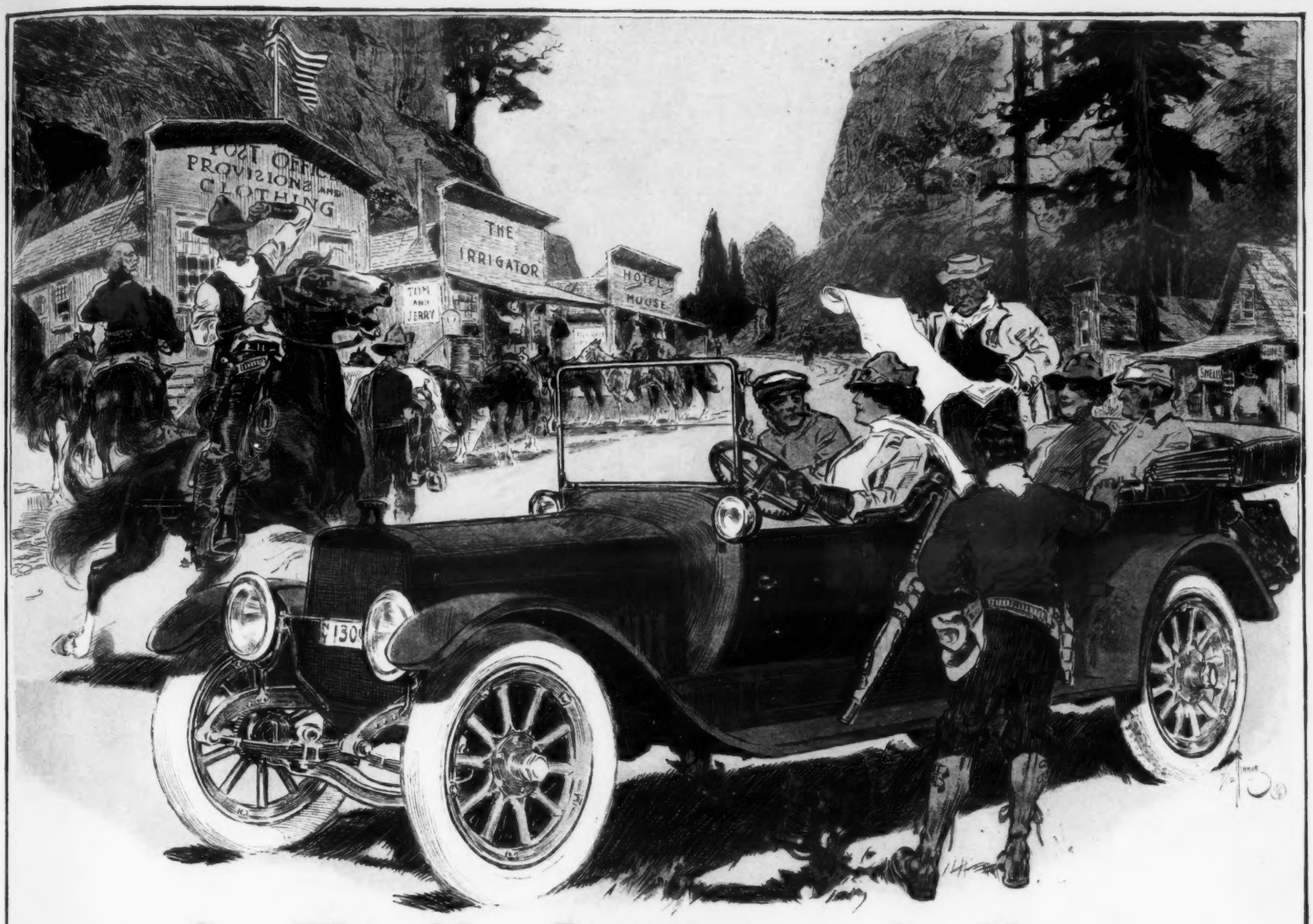
On the upper floor the chauffeur's room, which is 17 x 12 feet, is located. A trunk chest and clothes closet are provided for him in one corner of the room, and a white tiled bathroom with modern conveniences is built into the other portion of the room. A medicine case is also provided.



A durable, neatly built garage—stone with a slate roof

Interior of a private garage of a wealthy Californian

A simple private garage in the course of construction



See This New LOZIER *at the Shows*

THIS IS the first time the automobile industry has offered you a six-cylinder car of the very highest grade construction at a medium price. See the car—the Lozier "LIGHT SIX", a true Lozier for $3250—at the New York or Chicago shows. If you are not going to the shows, write us today for advance catalogue, photographic reproductions of exterior and interior of the car, and *all the information* about it. Then we can arrange, through the Lozier branch or agency nearest you, for you to see the car itself, to drive in it and know for yourself that it *is* a true Lozier in every part, every line, every little detail that makes for endurance, comfort and safety.

This new Lozier for $3250 is not so large as the Lozier you know now—that greatest of all high-grade $5000 cars—and not quite so powerful.

But the "LIGHT SIX" gives you Lozier *quality*, and by every true test you cannot get Lozier quality in any but a Lozier car.

On every touring highway in the world, and on every metropolitan boulevard, you find—in surpassing numbers—the men who *know* automobiles, the men who know them all, foreign and American-made alike, driving *Loziers*.

All over the country you find the people who are even *familiar* with automobiles speaking of Lozier with a regard which they attach to no other maker's name. Not because there are *great numbers* of Loziers all over the country, for there are not, but because of what the Lozier has *done*, because of what the name Lozier represents in six-cylinder construction.

One or two other makers have built Sixes as *long* as we have. But when that is said, all is said. For the public knows—*you* know—that the Lozier is the *only* Six that has figured prominently in the great national speed and endurance contests. You know that the Lozier holds, and *ever since* 1909 has held, the world's 24-hour stock chassis record. You can probably recall off-hand many of the great victories which have *proved* Lozier superiority of six-cylinder construction.

LOZIER
"LIGHT SIX"
$3,250

Factors That Help Make This a Really Great Car

Left Side Drive, Center Control—Six-cylinder long stroke motor—Unit power plant—Special Lozier smokeless lubrication—127½ in. wheel base—36x4½ in. tires, demountable rims—"Stream line" body design, eliminating the old projecting dash—Gray and Davis Electric Starter and Electric Lighting System—Bosch Magneto, Dual Ignition—Wind Shield, built into body, adjustable for ventilation or rain vision—12 in. TurkishUpholstery—WarnerSpeedometer—Instantaneous Locking Tire Carrier—Tool Boxes concealed in Running Boards—Silk Mohair Top, Top Cover, curtains quickly adjustable from seat—Ball-bearing transmission—Floating Type Ball-Bearing Axle—Double enclosed Rear Brakes—Platform Spring Suspension—Multiple Disc Clutch—Large Gasoline Pressure-Feed Tank, with gauge—Full heavy nickeled trimmings—Clock and Electric Horn—Illuminated Running Boards—Robe Rail, Foot Rest and Folding Luggage-Rack—Corrugated Hard Rubber Steering Wheel, and many other features all on a par with these.

Five Body Types, Open and Enclosed

It is this proof of better construction, greater endurance, coupled with Lozier style and Lozier luxury and the fact that for 8 years the Lozier has commanded—and still commands—a price of $5000, that has made the name Lozier mean so much.

The new Lozier "LIGHT SIX" now brings Lozier quality within the reach of thousands of Lozier enthusiasts who have always wanted Loziers but who didn't feel they could afford to put $5000 into an automobile.

No wonder the announcement of the Lozier "LIGHT SIX" came as a sensation in automobile trade circles.

The trade knows what a Lozier for $3250 means. Scores of the best and strongest dealers closed contracts for Lozier agencies and made deposits for Lozier "LIGHT SIXES" without even seeing the car or knowing the details of its design and construction. They knew a Lozier is *always* a Lozier and that there is no other car to match it. And they knew a Lozier for $3250 was bound to be the sensation of the year.

Advance orders for the "LIGHT SIX" have justified our confidence and the trade's confidence in the demand for the new Lozier. Our branches and agencies will make deliveries promptly, but there is a limitation to the production, even with such magnificent facilities as ours, of cars built like every Lozier is built. Therefore, it will be to your advantage to see your Lozier dealer, or write to us, now.

Ask for "LIGHT SIX" Advance Catalogue

LOZIER MOTOR COMPANY, 221 Mack Avenue, DETROIT, MICHIGAN

Works at Detroit, Michigan and Plattsburg, N. Y.

Factory Branches in New York, Chicago, Boston, Philadelphia and San Francisco. Dealers in all Principal Cities.

PERSONAL NOTE—It seems to me that this ad is peculiarly free from tire "bombast." It states plain facts in a way that cannot fail to appeal to the thousands of motorists who are keenly desirous of getting the exceptional tire service which the United States Tire Company is so admirably fitted to give its patrons.—J. D. ANDERSON

There is a Representative House in every Business

In the tire field the place is admittedly held by the United States Tire Company

IT is a great achievement in these days of big business to be the representative concern in any line.

Such a reputation is extremely difficult to acquire and equally difficult to maintain.

The United States Tire Company occupies this position in the realm of motor tires by virtue of a deliberate purpose to produce tires of such quality, and to conduct its business on such a plane and thru such representative dealers as would naturally give it first rank in its field.

Since the day the company was organized the impelling motive in all its operations has been this: To raise the standard of motor tire quality and to give to the tire user a character of service after the purchase of a tire that is in keeping with the position which the company occupies in the industry.

Clearly no other tire company has been in a position to contribute so much to the actual improvement of tire quality as has this company. With the facilities and experiences of four immense tire organizations to draw upon, it has been possible to evolve a tire of such composite strength and such uniform goodness as to practically establish a new era in tire making.

The phrase "United States Tires are good tires" has become an axiom in the trade and among the users of the tires.

'Tire-by Satisfied

Not content with its success in producing a superior grade of tires, this company has sought to have its product reach the motorist thru the most representative dealers it has been possible to secure in every community where United States Tires are sold.

The fact that today four-fifths of the best, most reliable dealers are handling these tires—and in many cases handling them exclusively—is sufficient proof that the tires have made a highly successful appeal to the calm judgment of the trade in the face of the most vigorous competition.

Another proof of the recognition which has been given these tires is to be found in the fact that the manufacturers of the highest-grade cars are either supplying them as a part of their regular equipment or will gladly furnish them when requested.

United States Tires have come to be recognized as the ideal equipment for the country's finest cars.

Stated briefly, the United States Tire Company expects to maintain its dominant place in the tire field, first, by the manufacture of strictly high-grade tires; second, by offering its product thru dealers of the highest standing in every community; and third, by guaranteeing to every motorist the fairest, squarest treatment it is possible to accord him both when a tire is bought and during its use.

United States Tires are good tires

Cost no more than you are asked to pay for other kinds

UNITED STATES TIRE COMPANY, NEW YORK